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ABSTRACT

The nature of the economy in Connecticut--its changing occupational structure and trends of population growth--and the changing pattern of higher education enrollments, particularly increasing enrollments in technical colleges and in relatively new regional community colleges, indicate the need for increased post-high school educational opportunities. Based on an analysis of employment and enrollment trends and community college objectives, this report presents guidelines for the future development of the regional community college system. Six models for providing college facilities and criteria for establishing new community colleges are detailed. Recommendations for new, expanded, or merged facilities are based on application of the criteria to each community college district. On the basis of first-hand acquaintance of the study team with topography, existing and planned road systems, and other accessibility factors, two areas of location for permanent community college facilities are recommended, and two proposed sites for which legislation has already been enacted are discouraged. An amalgamation of technical colleges with regional community colleges is recommended. Statistical studies of the present community college network, three alternative enrollment projection estimates, and maps are included. (Author/NHM)

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A SUGGESTED PLAN FOR DEVELOPING CONNECTICUT'S REGIONAL COMMUNITY COLLEGE SYSTEM

Report to

THE STATE BOARD OF TRUSTEES FOR
REGIONAL COMMUNITY COLLEGES

April, 1970

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Arthur D. Little, Inc.

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PREFACE

The State Board of Trustees for Regional Community Colleges in Connecticut invited Arthur D. Little, Inc., to develop and test several models for providing community college instruction and services throughout the state. This is the second state-wide study. The first in 1965 proposed the initial plan for a system of community colleges. Criteria were established and twelve districts were proposed. In the logical progression of events, and after eight community colleges had been established with two more planned for opening in the Fall, 1970, the need arose to determine alternatives for developing permanent facilities.

Since the nature of permanent facilities depend upon numbers and size of community colleges and their general areas of location, the initial plan was carefully re-examined on the basis of more recent and additional information available. Two additional locations are recommended and some important changes have been made in proposed districts based upon first hand acquaintance of the study team with topography, existing and planned road systems and other accessibility factors.

Our task was not to suggest specific sites. Our work did require suggesting areas of location within which a college should be established in order to provide to all citizens community college services without excessive costs of unnecessary duplication or serious voids of service. We assume that in each area of location there will be additional specific site selection studies.

We believe that if the present plan is implemented, without exception, Connecticut will have one of the best designed systems of regional community colleges in the nation. We believe also that action taken to deviate from the plan will have irreparable, costly, and harmful effects on many parts of the total state system. We believe that the present study contains guidelines for further developing and extending higher education opportunities to all residents on an equal basis.

CHAPTER I

SUMMARY AND RECOMMENDATIONS

SUMMARY

1. The nature of the economy in Connecticut -- its changing occupational structure and trends of population growth -- and the changing pattern of higher education enrollments, particularly the increasing enrollments in technical colleges and in the relatively new regional community colleges indicate the need for increased post-high school educational opportunities.

2. While Connecticut ranks among the top 50 states in the nation on the ability to pay for public higher educational services, it ranks relatively low on the effort made to provide these services to all its people.

3. An essential feature of a good public community college is comprehensiveness. In addition to providing the first two years of college work for students who will transfer to a four-year college or university to finish the last two years and qualify for a bachelor's degree, other equally important functions of the community college include providing both technical and semi-professional education, general education, community services, and guidance and counseling.

4. By statute, the public regional community college in Connecticut was conceived as a comprehensive institution, but a regulatory interpretation violates this concept by preventing community colleges from offering technical education courses.

5. A previous planning assumption -- underlying a 1965 study which recommended the establishment of twelve community colleges -- that a 1,000 student minimum is necessary for the operation of a viable community college is sound and reaffirmed by this study.

6. Six different models, or arrangements for providing community college instruction in regional areas, were developed. These are:

   - a single autonomous campus
   - joint occupancy through lease or contract with a four year college
   - multiple campuses located throughout a district
   - a single campus with one or more instructional centers
   - contractual relationships with public or private institutions in proximity for instruction in specialized areas
   - an educational park where several different types of institutions share different parts of a single campus.

7. On the basis of criteria developed, basic planning assumptions established and potential enrollments forecasted four of the six models were found to be applicable in fourteen (14) proposed community college service districts.

8. It is estimated that a minimum amount of 258-286 million dollars is needed to provide adequate physical facilities for 14 recommended campuses to accommodate enrollment conservatively projected to 1985. This assumes present technical college facilities would be amalgamated with developing community colleges. These costs would not include site acquisition or development.

9. It is conservatively estimated, that there will be at least 62,485 full time equivalent day and evening students in Connecticut public regional community colleges by 1985 if favorable conditions associated with good public community colleges prevail and the recommendations of this study are implemented. It is possible that the potential enrollment might be as high as 72,000 full time equivalent students.

10. An analysis of public two-year college offerings throughout the state reveals:

    - Some areas of the state are not served by two-year college programs,

- Some areas served by two-year college programs are provided with less than the full scope of opportunities and curricula needed, and

- Further program development is needed at all community colleges, particularly in the health sciences, public and social services, and engineering technologies. The latter should be provided at a level above the craftsman and skilled levels but below that of the highly trained scientific technologist whose preparation programs can qualify for accreditation by the Engineers Council for Professional Development.

11. Legislation already enacted to create community colleges in the North Central and Northeastern areas of the state is corroborated and will foster the further extension of higher education opportunities in accordance with a state plan designed to best serve all the people without voids of service or unnecessary duplication of resources.

12. Legislation already enacted to create a regional community college in the Ansonia-Derby area does not foster the best interests of residents in the southwestern part of the state. The law does not contribute to the development of an orderly and systematic plan by which all residents in Connecticut can be best served by community college services and programs. Its implementation will result in costly and unnecessary duplication of resources and harmful effects to the development of colleges extant and proposed in that area of the state which would best provide opportunity to all residents.

13. Findings of this study indicate that the geographical area of Meriden, Wallingford, Cheshire, and Southington does not constitute a good community college district for providing the best service to all the residents either in those areas or in adjacent ones where colleges already exist or are planned. To provide for needed expansion of higher education opportunities in those areas, particularly Meriden and Wallingford, other residentially impacted adjacent areas to the south including North Haven should be considered simultaneously.

RECOMMENDATIONS

Based upon the findings of this study we make the following recommendations:

1. The Connecticut legislators and legislative bodies should refrain from enacting any further statutes regarding Regional Community Colleges or Technical Colleges unless recommended by the Commission for Higher Education, the responsible agency to whom they have already legally delegated this important function. Failure to follow this procedure and policy can be unduly costly and result in the lack of a coordinated system which will best serve all the state's residents.

2. There be a public regional community college developed in the Brook Park area south of the village of Wallingford where it will be easily accessible not only to Meriden, Cheshire and Wallingford but also to North Haven, Hamden and North Branford residents. The development of a community college in Meriden would not contribute to the implementation of a plan for best serving all residents of the central and south central areas of the state.

3. General legislation should be enacted governing the establishment, maintenance, supervision, and operation of public regional community colleges in Connecticut. The statutes should provide a broad legal framework for regional community colleges, applicable to all areas of the state, and assign regulatory responsibilities to proper governmental agencies. Such legislation would preclude the need for special legislative enactments pertaining to specific geographical areas of the state.

4. Action should be taken immediately to develop a long range funding plan to provide adequate physical facilities and campus sites for regional community colleges.

5. Adequate physical facilities should be developed as rapidly as possible, because continued operation of existing colleges located in makeshift and temporary quarters provides little evidence about the needs which could otherwise be served.

6. Ultimately, technical colleges should be completely amalgamated with regional community colleges.

7. Regulatory provisions of the Board of Regional Community Colleges which are in effect for stimulating and coordinating program development in regional community colleges should be continued.

8. Six additional regional community colleges should be established as soon as possible in six areas: Danbury, New Britain-Bristol, Mohegan (Southeastern), North Central, Brook Park (Meriden-Wallingford-North Haven) and Northeastern-Windham.

9. The following models should be utilized in the provision of regional community college instructional programs.

Proposed Districts	Models I	II	III	IV	V	VI
Northeastern	X					
Southeastern	X	...	... or	...	...	X
North Central	X					
East Capitol	X					
Greater Hartford				X		
New Britain-Bristol	X					
Naugatuck Valley						X
South Central				X		
Greater Bridgeport				X and	X	
Southwestern				X		
Danbury Area	X					
Northwest and Litchfield Hills	X	...	... or	...	X	
Midstate-Estuary	X					
Brook Park (Wallingford)	X					

10. Facilities should be provided in each of the locations for the number of students as follows:

Northeastern	1,500
Southeastern	4,000
North Central	1,500
East Capitol	4,500
Greater Hartford	5,500
Bristol-New Britain	4,000
Naugatuck Valley	4,000
South Central	5,500
Greater Bridgeport	5,000
Southwestern	6,000
Danbury Area	2,300
Northwest and Litchfield Hills	1,700
Midstate-Estuary	1,600
Brook Park Area (Wallingford)	3,000
Total	50,100

CHAPTER II

THE STATE AND ITS HIGHER EDUCATION SYSTEM

INTRODUCTION AND SUMMARY

Discussed in this chapter is the Connecticut system of higher education as it currently exists and some of the major economic and demographic factors relevant to future planning for higher education.

Shifts are occurring in the structure of enrollments in different types of public higher education institutions. Establishment of community colleges has created an entirely new college going population, and this fact alone invalidates all previous projections of higher education enrollments based upon past trends. The sharp increase in the proportion of full time undergraduates enrolled in the regional community colleges since 1965 is an indication of the need for this type of education.

Population growth in the next decade will be substantial but distribution of population is not expected to change much. With improved highways recently completed, those now under construction, and those planned for the future, it will be possible for residents to have easy access to most any other part of the state. The relatively high ranking of Connecticut on personal income and per capita effective buying income is expected to persist throughout the decade. The state ranks relatively low among the 50 states on per capita appropriations for higher education operational purposes. Significant shifts are occurring in the occupational structure of the economy. They point to the need for technical and semi-professional workers in many fields, especially, engineering, health sciences, secretarial science and business, and public service fields.

THE HIGHER EDUCATION SYSTEM

The system of higher education in Connecticut consists of the University of Connecticut with its five branches (Hartford, Waterbury, Torrington, Stamford, and Groton), four State Colleges, five private community institutions (Mitchell, New Haven and Quinnipiac Colleges and the Universities of Bridgeport and Hartford), four State Technical Colleges, eight existing Regional Community Colleges and two new ones scheduled to open in 1970, eight seminaries, fourteen additional private colleges and universities and the U. S. Coast Guard Academy. With the enactment of Public Act 330 in 1965 and the advent of public regional community colleges, the structure of higher education enrollments began to change. In 1965, it was estimated that if Connecticut provisions for higher education were equal to those in the state with the highest percentage of college attendance, there would be twice as many Connecticut residents enrolled in colleges on a full-time basis than there actually were then.[1] Even though Connecticut ranked among the top states in the nation in per capita personal income and effective buying power, it ranked 36th during 1969-70 in per capita amount of state tax funds appropriated for higher education operating expenses.[2] The per capita amount of $26.87 was less than half the $57.35 per capita which was appropriated for this purpose in the State of Washington.

In 1968 71 percent of Connecticut's full time undergraduates were enrolled in public institutions and 29 percent were in independent institutions.[3] In 1968, 90.9 percent of the total full time enrollment in the public higher education system was derived from Connecticut residents; this excludes the Coast Guard Academy where only 5.7 percent of the enrollment was from the state. The relative proportion of resident versus total enrollment varies widely by kind of institution. In 1968, virtually all (99.5 percent) of the full time undergraduate enrollment in the state technical colleges and regional community colleges were state residents. About two thirds (67.9 percent) of those enrolled in independent two-year colleges and about one-half (47.0 percent) of those enrolled in independent four-year colleges and universities were Connecticut residents.

In private institutions the percentages of residents were slightly smaller. Less than half the enrollment in non-public four-year institutions and about two-thirds in non-public two-year colleges were residents of the state.

Therefore, even though the community college system has just recently been established and is still developing, its impact on the higher educational system is significant. In 1968, nearly 25 percent of all state residents enrolled full time in undergraduate public institutions (exclusive of the Coast Guard Academy) were enrolled in either a regional community college or a state technical college. Based upon 1970 population estimates for the state, there were 14.25 full time undergraduate residents enrolled in public and private institutes for each 1,000 residents. There were 2.5 persons per 1,000 population in regional community colleges and state technical colleges.

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[1] P. Orvis, Design for Opportunity: A Plan for a State System of Community Colleges in Connecticut, State Board of Trustees for Regional Community Colleges, Hartford, Connecticut, 1965. P. 26.

[2] American Association of Higher Education, College and University Bulletin, Vo. 22, No. 4, November 15, 1969, P. 2.

[3] Commission for Higher Education, Higher Education Annual Enrollment Survey, 1968.

The changing structure of enrollments (both resident and non-resident) in different types of public higher education institutions is shown in Table I. Although total numbers of full time undergraduates increased each year between 1965 and 1968, the proportion of students enrolled in state technical colleges and state colleges has remained fairly stable. The proportion in regional community colleges has increased markedly, while the proportion at the University of Connecticut decreased. The importance of the regional community college is further enhanced by considering part time as well as full time students.

TABLE I

PERCENT OF OPENING FALL ENROLLMENT OF FULL TIME UNDERGRADUATES IN THE PUBLIC SYSTEM

Type of Public Institution	Percent By Year				
	1965	1966	1967	1968	
Regional Community College	5.4	10.5	14.9	16.3	(17.9*)
State Technical College	7.1	6.1	6.4	6.1	(10.4)
State Colleges	41.9	43.1	41.8	43.4	(42.8)
University of Connecticut	45.6	39.9	37.1	34.7	(28.8)

* Total enrollment (part and full time) by percent.

In 1968, regional community colleges enrolled about 18 percent of the total opening fall enrollments and state technical colleges an additional 10.4 percent. Proportionately, state colleges and the University had fewer part time students. Independent colleges enrolled over half the number of part-time students (10,413 of 20,685 total). However the proportion of all undergraduate students in independent colleges was about the same as the proportion of full time undergraduate students.

Likewise, the proportion of full time undergraduate enrollments in public and independent institutions has been changing. The percents in independent colleges and universities were as follows: 1965-51%, 1966-49%, 1967-46%, 1968-44%. In 1968, when data were available on part time as well as full time students, 45 percent of the total were in independent institutions.

In 1967 and 1968 respectively, the percents of first time full time students reported in the opening fall enrollments in state technical colleges and regional community colleges constituted 35.9 and 39.4 percents of the total enrollments in public institutions. Not all first time full time students would have been freshmen, but the majority of them in the two-year institutions were probably freshmen.

Locations of Connecticut public higher education institutions are shown in Figure 1. Also shown are revised proposed districts for regional community colleges recommended by ADL staff after careful analysis of enrollment projections, transportation routes extant and planned, geographical terrain, time distance factors, and population densities and projections.

Several economic and demographic factors will continue to influence the structure and growth of the system of higher education in Connecticut; the rest of this chapter briefly summarizes some background trends pertinent to future higher education planning.

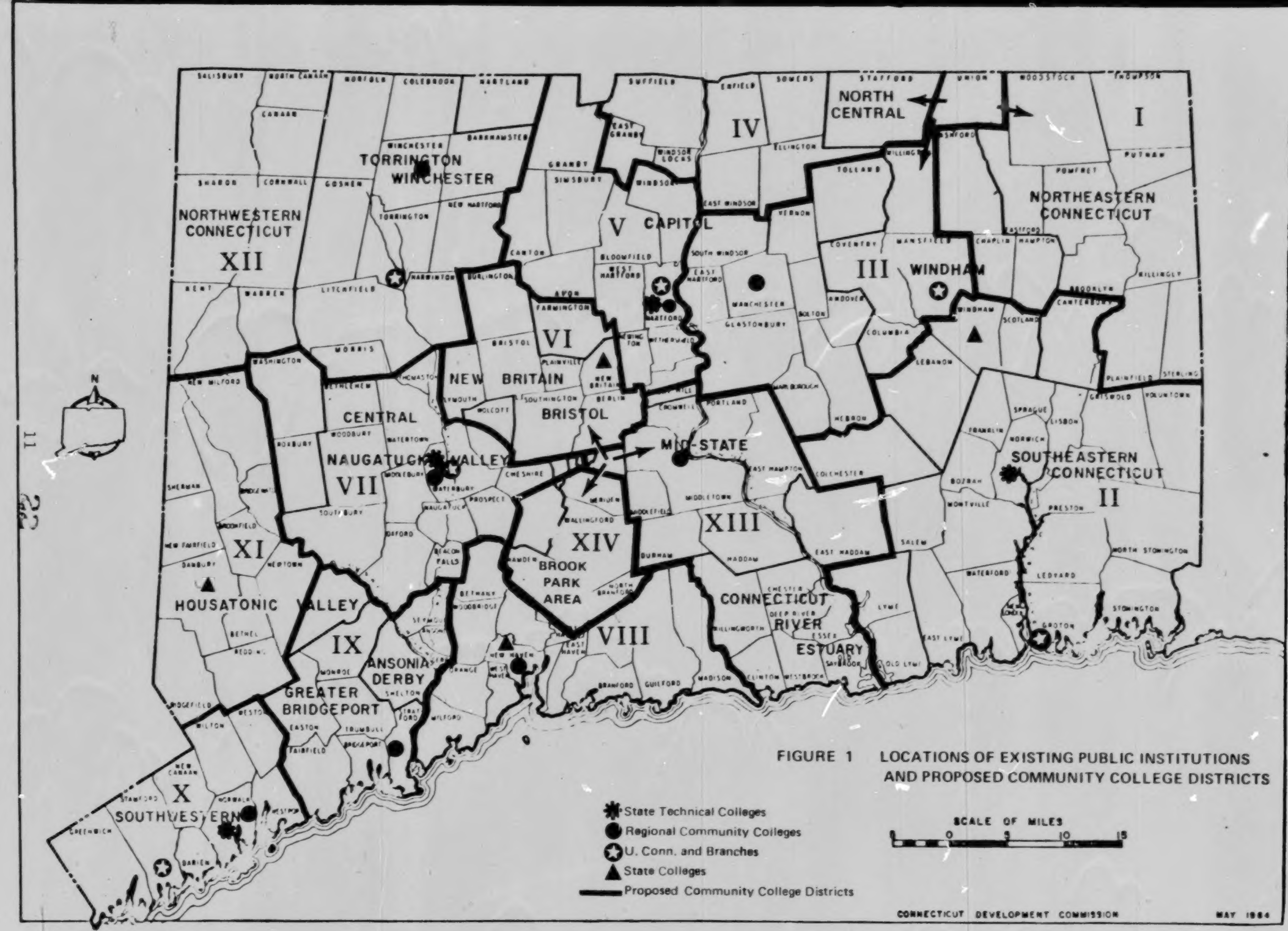
ECONOMIC AND DEMOGRAPHIC FACTORS

Recent studies contain much information, statistical and otherwise on conditions in Connecticut. To avoid being redundant, only those background factors pertinent to the problem have been included here

POPULATION

In the last seven decades, population growth in Connecticut has exceeded the New England average and, since 1940, the state has been growing faster than the United States as a whole. At present, Connecticut is the second largest New England state and the 24th most populated state in the nation. It ranks fourth in the United States in population density. Fifty towns contain 75 percent of the total population and only 23 percent of the land area. The density of these 50 towns is about 1,950 persons per square mile, while the remaining 119 towns have a density of about 195 persons per square mile.

The Connecticut Interregional Planning Program projects a 20 percent growth in the state's population between 1970 and 1980 to a total of 3,725,000 persons. (See Figure 2 for planning regions.) The sharpest percentage gains are expected in the Housatonic Valley region. The Greater Bridgeport region is likely to grow most slowly. While growth is indicated, the distribution of population in Connecticut is not expected to change substantially between now and 1980. The most populated regions in 1980



NORTHWESTERN CONNECTICUT
XII
TORRINGTON WINCHESTER
V CAPITOL
IV
NORTH CENTRAL
I
NORTHEASTERN CONNECTICUT
III WINDHAM
VI
NEW BRITAIN
BRISTOL
CENTRAL
NAUGATUCK VALLEY
VII
MID-STATE
XIII
XIV
BROOK PARK AREA
SOUTHEASTERN CONNECTICUT
II
CONNECTICUT RIVER ESTUARY
VIII
XI
HOUSATONIC VALLEY
IX
ANSONIA DERBY
GREATER BRIDGEPORT
X
SOUTHWESTERN
SALISBURY
NORTH CANAAN
NORFOLK
COLEBROOK
HARTLAND
SUFFIELD
ENFIELD
SOMERS
STAFFORD
UNION
WOODSTOCK
THOMPSON
CANAAN
WINCHESTER
BARKHAMSTED
EAST GRANBY
WINDSOR LOCKS
ELLINGTON
WILLINGTON
ASHFORD
PUTNAM
POMFRET
SHARON
CORNWALL
GOSHEN
GRANBY
SIMSBURY
WINDSOR
EAST WINDSOR
TOLLAND
VERNON
NEW HARTFORD
TORRINGTON
CANTON
BLOOMFIELD
SOUTH WINDSOR
COVENTRY
MANSFIELD
EASTFORD
CHAPLIN
HAMPTON
KILLINGLY
KENT
WARREN
LITCHFIELD
HARWINTON
BURLINGTON
AVON
WEST HARTFORD
EAST HARTFORD
MANCHESTER
ANDOVER
BROOKLYN
CANTERBURY
FARMINGTON
HARTFORD
WETHERSFIELD
NEWINGTON
GLASTONBURY
BOLTON
COLUMBIA
WINDHAM
SCOTLAND
MORRIS
BRISTOL
PLAINVILLE
NEW BRITAIN
LEBANON
PLAINFIELD
STERLING
NEW MILFORD
WASHINGTON
BETHLEHEM
THOMASTON
PLYMOUTH
SOUTHINGTON
BERLIN
ROCKY HILL
CROMWELL
PORTLAND
MARLBOROUGH
HEBRON
GRISWOLD
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SOUTHBURY
PROSPECT
NAUGATUCK
MERIDEN
MIDDLETOWN
MONTVILLE
PRESTON
BROOKFIELD
NEW FAIRFIELD
OXFORD
WALLINGFORD
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DANBURY
NEWTOWN
BEACON FALLS
HAMDEN
DURHAM
HADDAM
EAST HADDAM
SALEM
WATERFORD
LEDYARD
NORTH STONINGTON
BETHANY
WOODBRIDGE
NORTH BRANFORD
CHESTER
DEEP RIVER
BETHEL
SEYMOUR
LYME
STONINGTON
REDDING
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MONROE
ORANGE
NEW HAVEN
WEST HAVEN
EAST HAVEN
OLD SAYBROOK
OLD LYME
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CONNECTICUT DEVELOPMENT COMMISSION
MAY 1964

FIGURE 1 LOCATIONS OF EXISTING PUBLIC INSTITUTIONS AND PROPOSED COMMUNITY COLLEGE DISTRICTS

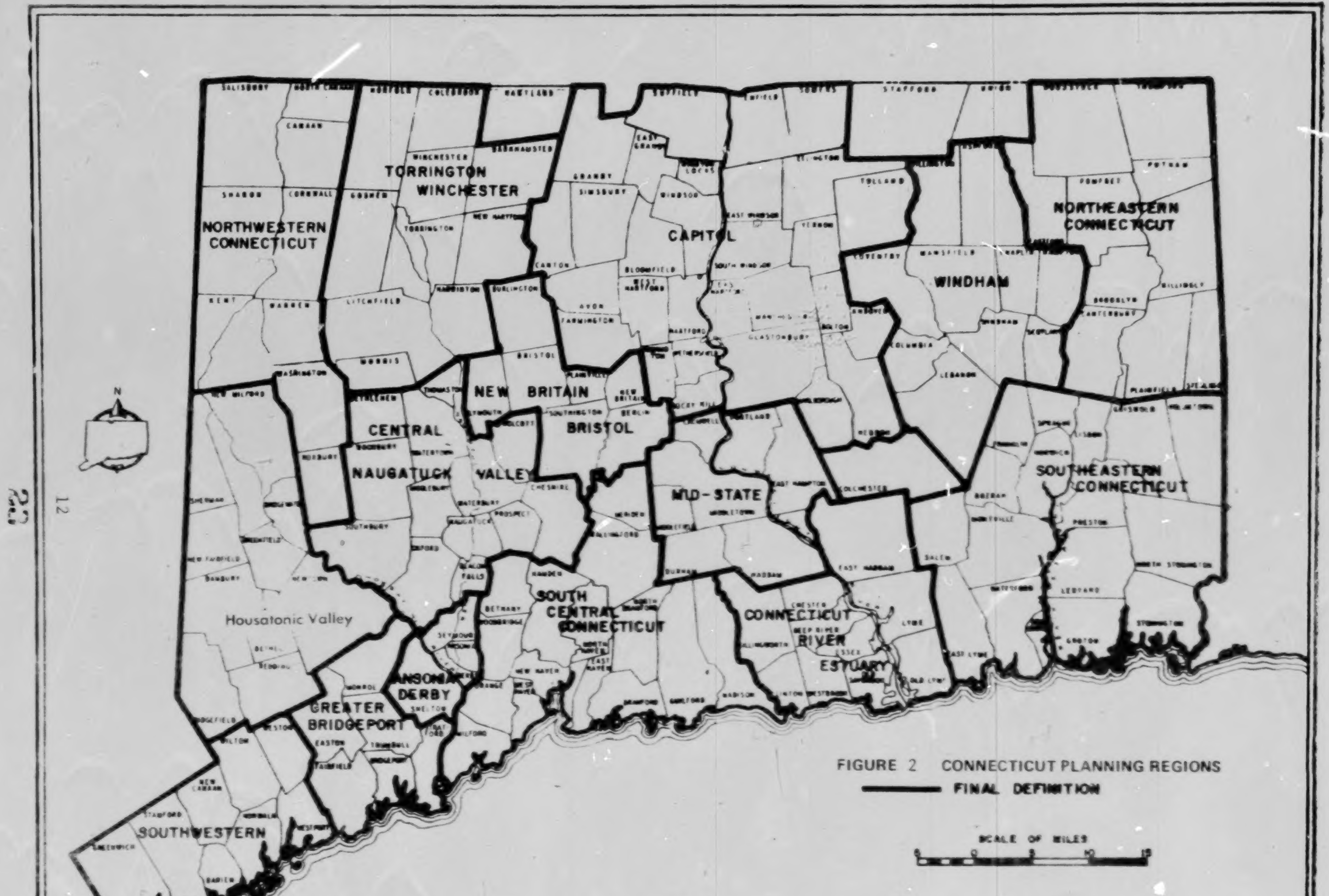
NORTHWESTERN CONNECTICUT
TORRINGTON WINCHESTER
CAPITOL
NORTHEASTERN CONNECTICUT
WINDHAM
NEW BRITAIN
BRISTOL
CENTRAL NAUGATUCK VALLEY
MID-STATE
SOUTHEASTERN CONNECTICUT
SOUTH CENTRAL CONNECTICUT
CONNECTICUT RIVER ESTUARY
Housatonic Valley
ANSONIA DERBY
GREATER BRIDGEPORT
SOUTHWESTERN
N
FINAL DEFINITION
SCALE OF MILES
5
0
5
10
15

FIGURE 2 CONNECTICUT PLANNING REGIONS

CONNECTICUT DEVELOPMENT COMMISSION February will still be Capitol and South Central. The Connecticut River Estuary, Northwestern, and Northeastern regions will remain the least populated. (See Table II.)

TRANSPORTATION

Connecticut has an extensive network of expressways and major highways. A larger proportion (99 percent) of the state's total road mileage is paved or hard-surfaced than in any other state. The Connecticut Turnpike (Interstate 95) runs across the Southern part of the state. Route 15 reduces the traffic burden on Interstate 95 in the heavily populated Southwestern section. Interstate 84 carries traffic from the Danbury area to Hartford. Interstate 91 in the center of the state, Route 52 on the eastern edge of the state, and Route 8 in the western part run north and south.

Based on the expected growth of population, employment, and passenger cars on the road, plans have been developed to expand the present expressway system. An additional north/south route is planned for the central part of the state. In the North, two major additions will be built. One will run from Hartford diagonally toward the Northwest, and the other will run horizontally from Hartford toward the east. Also, several roads connecting major highways will be constructed and most of the existing expressways will be enlarged. The major additions are shown in Figure 3.

INCOME

Connecticut's share in the nation's personal income has continued to increase. With only 1.33 percent of the country's population, the state had 1.67 percent of the nation's personal income in 1950. By 1966, personal income in Connecticut had risen to 1.83 percent of that of the United States, while the population of the state increased to only 1.47 percent of the national total. In 1966, Connecticut's per capita income of $3,690 was the highest in the United States and 24.5 percent above the national average. The state also ranks first in per capita effective buying income[4] which, in 1966, was $3,146 per person, 23.7 percent above the U. S. average. With a per household effective buying income of $10,563, Connecticut ranked third among the states and was 23.8 percent above the national level of $8,532. The Stamford-Norwalk-Bridgeport area had an average house-hold income of $12,730, first among the nation's metropolitan county areas. The per capita retail sales data compiled by the Connecticut Development Commission reflect the relative purchasing power of the planning regions. (See Table III.)

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[4] Total income less estimated payments for federal, state, and local taxes.

TABLE II

POPULATION TRENDS BY PLANNING REGION*

	1960	1970	1980	1960 to 1970	1970 to 1980
	(in thousands)			(percent change)	
Capitol	547	681	818	24%	20%
South Central	449	530	618	18	17
Southwestern	279	354	440	27	24
Greater Bridgeport	278	307	340	10	11
Central Naugatuck Valley	195	227	268	16	18
Central	187	222	261	19	18
Southeastern	179	223	274	25	23
Housatonic Valley	77	120	166	56	38
Mid-State	66	81	103	23	27
Valley	60	70	83	17	19
Litchfield Hills	60	69	80	15	16
Windham	49	67	87	37	30
Northeastern	47	61	76	30	25
Connecticut River Estuary	27	43	57	59	33
Northwestern	16	19	23	19	21
Nondefined	19	26	31	37	19
TOTALS	2535	3100	3725	22%	20%

* Source: Connecticut Development Commission.

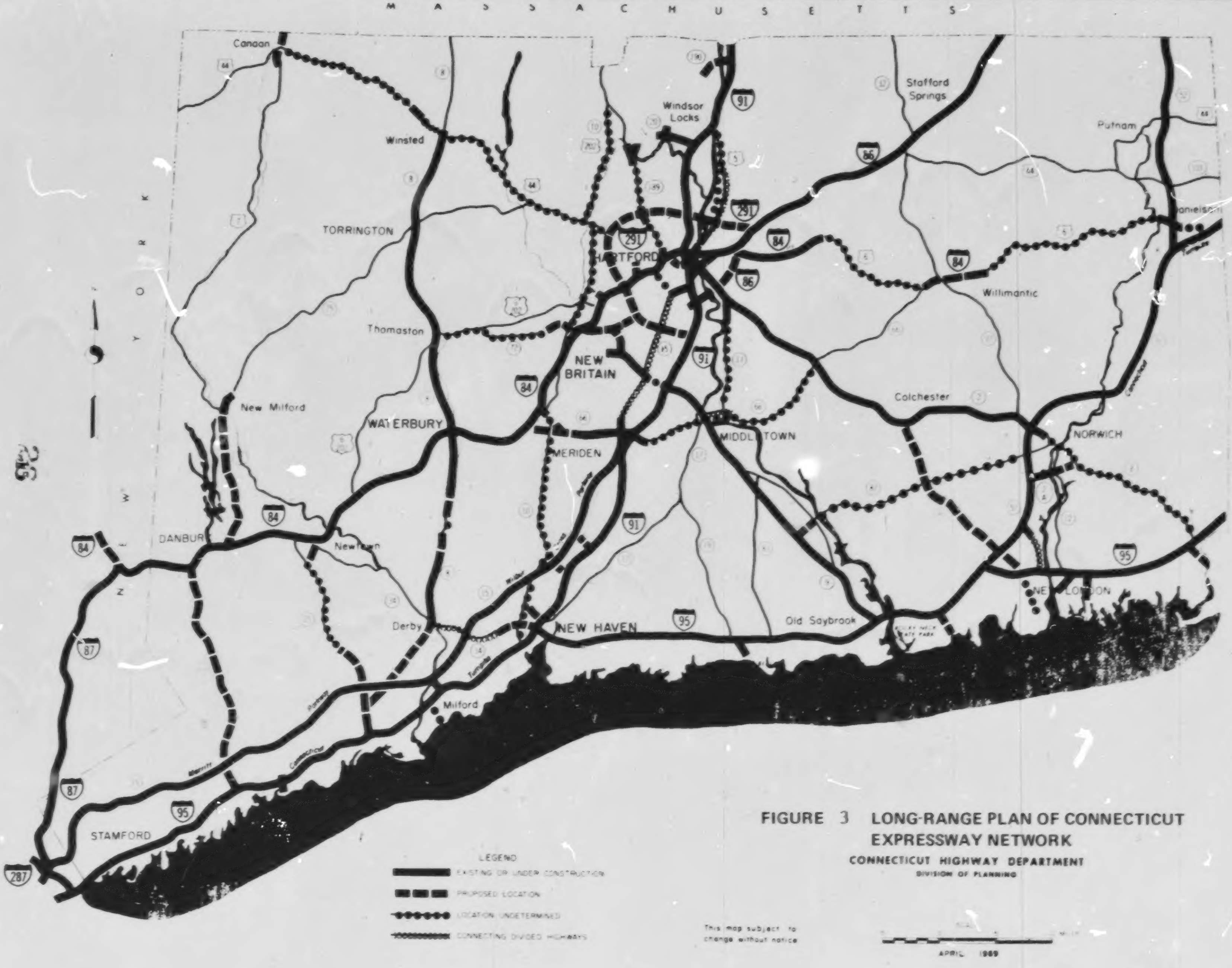
MASSACHUSETTS
RHODE ISLAND
NEW YORK
Canaan
Winsted
TORRINGTON
Thomaston
New Milford
WATERBURY
DANBURY
Newtown
Derby
Milford
STAMFORD
Windsor Locks
HARTFORD
NEW BRITAIN
MERIDEN
MIDDLETOWN
NEW HAVEN
Old Saybrook
Stafford Springs
Putnam
Danielson
Willimantic
Colchester
NORWICH
NEW LONDON
91
291
86
84
95
87
287
LEGEND
EXISTING OR UNDER CONSTRUCTION
PROPOSED LOCATION
LOCATION UNDETERMINED
CONNECTING DIVIDED HIGHWAYS
This map subject to change without notice
APRIL 1989

FIGURE 3 LONG-RANGE PLAN OF CONNECTICUT EXPRESSWAY NETWORK

CONNECTICUT HIGHWAY DEPARTMENT

DIVISION OF PLANNING

TABLE III

ESTIMATED PER CAPITA RETAIL SALES IN THE PLANNING REGIONS OF CONNECTICUT IN 1966*

Region	Per Capita Retail Sales 1966
Capitol	$1,906
Southwestern	1,894
Connecticut River Estuary	1,768
Greater Bridgeport	1,749
South Central	1,742
Housatonic Valley	1,642
Litchfield Hills	1,605
Valley	1,533
Central Naugatuck Valley	1,501
Central Connecticut	1,477
Southeastern	1,468
Northwestern	1,443
Mid-State	1,356
Northeastern	1,281
Windham	1,222
TOTAL	1,698

* Source: Connecticut Development Commission.

The state ranks fourth in the United States in percent of personal income derived from manufacturing. Manufacturing is the source of approximately one-third of Connecticut's personal income whereas only about 22 percent of the personal income of the entire nation is provided by manufacturing.

EMPLOYMENT

The per capita personal income of Connecticut's citizens has been higher than other states largely because of the industrial and occupational mix within the Connecticut economy. All the highly skilled professions and special crafts of the modern economy are represented in the state.

Connecticut ranks second in the nation in the ratio of manufacturing employees to total nonagricultural employment. Manufacturing industries employ 42 percent of its nonagricultural labor force and 16 percent of the state's total population. Manufacture of durable goods makes up about 70 percent of the state's total employment. In comparison, only 58 percent of industrial employment in the United States is engaged in the manufacture of durable goods. Approximately one-half of the manufacturing employment is concentrated in ten towns: Bridgeport, East Hartford, Hartford, New Haven, Waterbury, Stratford, Groton, Stamford, New Britain, and Norwalk. Only 60 of the state's 169 towns account for 94 percent of the manufacturing employment and over 86 percent of the manufacturing establishments are located in these 60 towns. The state ranks first in military prime contracts on a per capita basis and, although only 24th in population, it ranks fifth in the nation in total prime military contracts awarded. Shown in Table IV is the breakdown for Connecticut by industry group.

Through 1975, shifts in the occupational structure of Connecticut's economy are expected to take place, according to a study undertaken by the Connecticut Labor Department. Professional and technical jobs, especially in medicine and engineering, are expected to continue to grow rapidly. Hospitals and other health centers will probably undergo extensive expansion of both resident and outpatient facilities and services. Although some reduction in employemnt is anticipated in the manufacturing sector, engineering staffs will be needed in greater numbers to blueprint more sophisticated products and systems. A substantial amount of the projected reduction in manufacturing is expected to occur in the unskilled labor and semiskilled operative classes. Expansion of job opportunities for operatives are expected to be limited principally to the transport and utility sectors.

TABLE IV

LEADING INDUSTRIES IN CONNECTICUT IN 1965[1]

Industry	Employees (thousands)	Payroll (million $)	Value Added By Manufacture (million $)
Transportation Equipment	88.1	692.6	1,088.4
Machinery, except electrical	62.5	450.0	797.8
Electrical Machinery	45.3	268.1	497.6
Fabricated Metal Products	43.2	263.4	504.7
Primary Metal Industries	27.1	196.2	441.6
Miscellaneous Manufactures*	18.0	106.2	226.8
Printing and Publishing	17.8	111.5	195.0
Instruments and Allied Products	17.6	113.8	215.0
Rubber and Plastic Products	16.9	102.8	177.3
Apparel and Related Products	15.4	59.7	90.0
Textile Mill Products	14.3	71.3	132.4
Food and Kindred Products	12.8	73.0	182.1
Chemicals and Allied Products	12.7	87.0	355.5
Ordnance and Accessories	8.6	58.1	104.2
Paper and Allied Products	7.6	49.2	98.5
Stone, Clay and Glass	7.5	50.3	110.2
All Others**	9.0	44.7	79.5
STATE TOTALS	441.6	2956.9	5296.4

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[1] Source: 1965 Annual Survey of Manufactures

*Includes silverware, sporting goods, toys, jewelry, brushes, pens, pencils, notions and other SIC 39 industries.

**Includes tobacco products, lumber and wood, furniture and fixtures, leather and leather products, and petroleum products.

Clerical jobs are likely to show substantial increases through 1975. Typists, stenographers, secretaries and office machine operators probably will be in greatest demand. Jobs for service workers, especially waiters, cooks, and bartenders, are likely to undergo substantial growth as are protective service jobs. Expanding demands for mechanics, repairmen, and foremen are expected to more than offset a decline in the number of skilled metal workers, resulting in a net gain in the number of craftsmen through 1975.

These crosscurrents reflect the anticipated shift in most industries to a more mechanized productive technology requiring different occupational skills. Shown in Table V is the expected growth in occupations of concern to community college administrators in developing curricula to serve state needs.

TABLE V

CONNECTICUT PROJECTED EMPLOYMENT
BY MAJOR OCCUPATIONAL GROUPS AND SELECTED OCCUPATIONS

Occupations	Numbers 1968	 1975	Percent Change 1968-75
Professional, Tech. & Kindred	197,900	234,560	18.5
Engineers, Technical	31,540	37,510	18.9
Aeronautical	4,710	5,930	25.9
Chemical	1,180	1,180	0.0
Civil	2,810	3,480	23.8
Electrical	4,260	4,860	14.1
Industrial	4,950	6,200	25.3
Mechanical	6,830	7,740	13.3
Metallurgical	910	1,020	12.1
Mining	100	100	0.0
Technical, n.e.c.	5,790	7,000	20.9
Natural Scientists	3,980	5,170	29.9
Technicians, Exc. Medical & Dental	21,400	25,940	21.2
Draftsmen	6,750	7,280	7.9
Surveyors	1,030	1,360	32.0
Air Traffic Controllers	60	60	0.0
Radio Operators	330	430	30.3
Other, n.e.c.	13,230	16,810	27.1
Medical & Other Health Workers	32,390	41,160	27.1
Dietitians & Nutritionists	620	690	11.3
Nurses, Professional	15,900	19,910	25.2
Technicians, Medical & Dental	4,110	6,310	53.5
Veterinarians	230	330	43.5
Chiropractors & Therapists	1,310	1,800	37.4
Teachers	46,010	49,980	8.6
Elementary	20,900	20,270	-3.0
Secondary	13,990	15,980	14.2
Social Scientists	1,550	1,810	16.8
Other Professional, Tech. & Kindred	61,030	72,990	19.6
Accountants & Auditors	9,320	9,990	7.2
Airplane Pilots & Navigators	590	630	6.8
Artists, Athletes & Entertainers	3,900	4,410	13.1
Designers, exc. Des. Draftsmen	2,290	2,540	10.9
Librarians	2,440	2,640	8.2
Photographers	1,090	1,170	7.3
Social & Welfare Workers	3,460	4,680	35.3
Clerical & Kindred Workers	223,020	253,930	13.8
Stenos., Typists & Secretaries	55,540	63,230	13.8
Office Machine Operators	11,370	15,870	39.6
Other Clerical & Kindred	156,110	174,830	12.0
Accounting Clerks	8,020	8,650	7.8
Bookkeepers, Hand	16,630	18,200	9.4
Bank Tellers	3,860	5,260	36.3
Cashiers	10,050	13,730	36.6
Mail Carriers	4,150	5,120	23.4
Postal Clerks	3,610	3,750	3.9
Shipping and Receiving Clerks	6,150	5,540	-9.9
Telephone Operators	6,160	6,460	4.9
Clerical & Kindred Workers, n.e.c.	97,480	108,120	10.9

TABLE V (Continued)

CONNECTICUT PROJECTED EMPLOYMENT
BY MAJOR OCCUPATIONAL GROUPS AND SELECTED OCCUPATIONS

Occupations	Numbers		Percent Change
	1968	1975	1968-75
Managers, Officials & Proprietors	106,770	116,680	9.3
Conductors, Railroad	440	430	-2.3
Creditmen	1,020	1,380	35.3
Purchasing Agents	3,130	3,650	16.6
Postmasters & Assistants	270	260	-3.7
Man., Offic., & Prop., n.e.c.	101,910	110,960	8.9
Sales Workers	90,560	101,530	12.1
Insurance Agents & Brokers	9,630	10,330	7.3
Real Estate Agents & Brokers	3,250	3,660	12.6
Other, n.e.c.	77,680	87,540	12.7
Craftsmen, Foremen & Kindred	206,130	214,670	4.1
Construction Craftsmen	43,400	44,860	3.4
Carpenters	13,690	13,220	-3.4
Brickmasons, Stone Setters	3,200	3,220	0.6
Cement & Concrete Finishers	200	240	20.0
Electricians	7,130	7,650	7.3
Excavating, Grading Mach. Operators	2,940	3,570	21.4
Painters & Paperhangers	6,320	6,110	-3.3
Plasterers	430	450	4.6
Plumbers & Pipefitters	6,910	7,510	8.7
Roofers & Slaters	880	980	11.4
Structural Metalworkers	1,700	1,910	12.4
Foremen, n.e.c.	34,320	36,650	6.8
Metalworking Craftsmen exc. Mechanics	38,870	34,240	-11.9
Skilled Machine Workers	16,300	14,000	-14.1
Blacksmiths, Forge. Hammer.	640	450	-29.7
Boilermakers	240	230	-4.2
Heat Treat., Anneal, Temp.	1,400	1,240	-11.4
Millwrights	1,290	1,240	-3.9
Molders, Metal exc. Coremakers	1,290	1,070	-17.1
Patternmakers, Metal & Wood	1,490	1,360	-8.7
Rollers & Roll Hands	810	690	-14.8
Sheet Metal Workers	4,480	4,360	-2.7
Tool & Diemakers, Setters	10,930	9,600	-12.2
Mechanics & Repairmen	49,580	57,970	16.9
Airplane Mechanics & Repairmen	3,690	3,860	4.6
Motor Vehicle Mechanics	11,590	13,280	14.6
Office Machine Mechanics	810	1,030	27.2
Radio & TV Repairmen	1,630	1,790	9.8
Railroad & Car Shop Mechanics	180	170	-5.6
Other Mechanics & Repairmen	31,680	37,840	19.4
Printing Trades Craftsmen	6,790	6,880	1.3
Compositors & Typesetters	3,800	3,400	-10.5
Electrotypers & Stereotypers	140	100	-28.6
Engravers exc. Photoengravers	330	320	-3.0
Photoengravers & Lithographers	880	1,230	39.8
Pressmen & Plate Printers	1,640	1,830	11.6
Transportation & Public Utility Craftsm.	5,720	5,800	1.4
Linemen & Servicemen	5,150	5,350	3.9

TABLE V (Continued)

CONNECTICUT PROJECTED EMPLOYMENT BY MAJOR OCCUPATIONAL GROUPS AND SELECTED OCCUPATIONS

Occupation	Numbers 1968	1975	Percent Change 1968-75
Locomotive Engineers	410	410	0.0
Locomotive Firemen	160	40	-75.0
Other Craftsmen & Kindred Workers	27,450	28,270	3.0
Bakers	2,040	2,110	3.4
Cabinetmakers	1,150	1,230	7.0
Cranemen, Derrick & Hoistmen	1,810	1,870	3.3
Glaziers	350	450	28.6
Jewelers & Watchmakers	730	770	5.5
Loom Fixers	300	260	-13.3
Millers	40	30	-25.0
Opticians & Lens Grinders	400	440	10.0
Stationary Engineers	4,830	4,550	-5.8
Inspectors	2,200	2,600	18.2
Upholsterers	1,210	1,430	18.2
Craftsmen & Kindred Workers, n.e.c.	12,390	12,530	1.1
Operatives & Kindred Workers	269,260	268,470	-0.3
Semiskilled Metalworking Occupations	77,070	70,280	-8.8
Service Workers	119,310	142,840	19.7
Protective Service Workers	17,390	20,820	19.7
Firemen & Fire Protection	4,090	5,040	23.2
Police, Marshals, Sheriffs	6,780	9,020	33.0
Guards, Watchmen	6,520	6,760	3.7
Waiters, Cooks & Bartenders	28,850	35,760	24.0
Other Service Workers	52,470	63,260	20.6
Nurses, Practical	4,160	5,860	40.9

Source: Connecticut Labor Department

CHAPTER III

RATIONALE AND CRITERIA FOR ANALYSIS AND EVALUATION

INTRODUCTION

This section contains the rationale and criteria used to develop and test models for facilities development for Connecticut regional community colleges. Since public community colleges are relative newcomers to the Connecticut higher educational system, a discussion of their roles and objectives precedes a review of the previous planning assumptions considered for the regional community college system. The six models which were developed as alternative ways to provide community college instruction within the context of different regional conditions are discussed. Recommendations regarding the specific types of physical plant to be used and general criteria for the establishment and operation of efficient and viable regional community colleges are included.

DEFINITION OF A PUBLIC COMMUNITY COLLEGE

Images of what a public community college is or should be vary in accordance with a person's knowledge and understanding of what good community colleges are as found elsewhere and his values and needs at a given point in time. So educators and laymen view the community college in quite different ways; basically the lay person judges the college in accordance with his personal educational need, and his perception about the college's ability to meet his needs. For example, a person who sees no direct profit to himself from a college or who has a conservative orientation to society in general may think of the community college as a place where poorly qualified students are weeded out so that public funds can be saved. Another person, not being served by the college and possessing a reactionary orientation to society, might view the college as an unnecessary organization threatening certain values he prizes. A person with a liberal orientation to society or whose needs are being served by the college may think of it as an institution providing equal opportunities for all by teaching whoever needs to learn, whatever needs to be learned, whenever one needs to learn it and contributing to the general upgrading of society through services not made available by either high schools or other institutions of higher education.

But regardless of how different persons view the institution, there are certain general features of a genuine community college.

A major characteristic of a public community college is Comprehensiveness. Comprehensiveness means that the institution, under a single organizational structure, offers the full range of technical and semi-professional level occupational curricula, including the engineering technologies, plus preprofessional and liberal arts and science programs for students who will eventually transfer to four year colleges. In addition, the comprehensive college offers a vast variety of educational-cultural services to meet community needs and interests. Every comprehensive community college offers, as a normal and regular part of its program, technical institute type courses.

Depending upon state and local conditions, there are gradations of comprehensiveness to be expected among separate colleges. A false concept of comprehensiveness is that each college will offer all the programs offered by any other. An aggregation of offerings in all community colleges in the system should reveal that programs of every type exist in sufficient numbers to serve student interest and needs for state, regional, and even national demands. Such a system will require controlled program differentiation among the institutions. There will be sufficient need for some types of programs so that every community college should offer them. Yet the demands for and interest in other curricula could not warrant their existence at each institution. This concept is shown in Illustration 1. The width of the illustration represents the magnitude of demand and interest, or need for programs within the state. The altitude of the figure represents the degree of specialization. Block A at the bottom represents those study-areas in which there is sufficient demand and interest to warrant programs in each community college, An example might be curricula in business education such as secretarial science. Area D represents those programs for which demand and interest is extremely limited and which are usually highly specialized; examples are an associate degree program in Mortuary Science, Nuclear Technology, Aviation

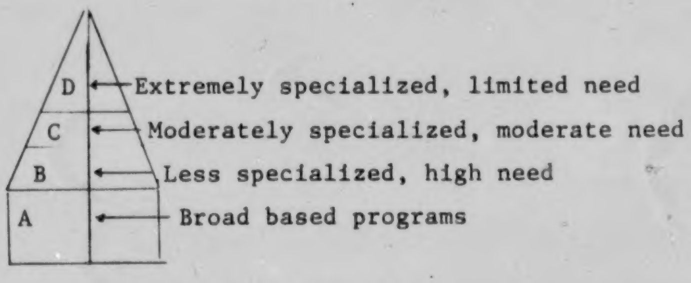
D
C
B
A
Extremely specialized, limited need
Moderately specialized, moderate need
Less specialized, high need
Broad based programs

Illustration 1: Concept of System Comprehensiveness and Institutional Differentiation

Technology, etc. These are not needed in each college; a program in Mortuary Science in one college would suffice. Areas C and B represent graduated demand and need and imply differences in numbers of programs which should be permitted to exist to meet the demand and need.

Another major characteristic of a comprehensive public community college is its "open door" admissions policy. It provides for all people beyond the 12th grade age level (whether or not they are high school graduates) post high school services of many kinds from cultural activities of general community interest to programs from which students can transfer to four year colleges or enter gainful employment. Students of all ages, adolescent and adult, represent a variety of socioeconomic backgrounds, levels of abilities, types of motivations and attitude sets. There is no selectivity for admission to the institution (academic, social, or economic) but admission to certain curricula in the college is limited to those with prerequisite attributes for success. Meanwhile the college offers programs for those persons not possessing the prerequisites to enable them to upgrade their proficiencies and overcome deficiencies. Therefore, programs must reflect the needs of the local region as well as the more generalized and changing needs of a scientific and technological society.

Another characteristic is that, unlike higher educational institutions which enroll a majority of students from outside a reasonable daily commuting distance, a community college is a functioning segment of the region it serves. Its services are not confined to the traditional functions of the four year college but include activities for the education of the young, continuing education for the older citizens and the general improvement of the community through beneficial and appropriate educational and cultural services.

A comprehensive definition of a community college is that it is an educational organization offering post high school programs of less than the bachelor's degree level serving persons who:

- Desire to prepare for entrance into occupational fields requiring more than high school but less than a bachelor's degree level of education and training.
- Want to improve their general cultural backgrounds but have no interest in preparing for either a job or a baccalaurate degree.
- Want to acquire job skills in a different field or to upgrade themselves for advancement in the work in which they are employed.

- Wish to complete the first two years of liberal arts and sciences or preprofessional education near home and later transfer to a four year college or university to complete the last two years of baccalaureate degree.
- Feel the need for guidance and counseling assistance in career selection or in the removal of deficiencies for college programs.
- Are interested in community betterment projects of a cultural, civic, recreational, health or other type for which community college resources can be utilized.
- Need a second chance for success (under conditions most likely to foster it) after failing to progress satisfactorily in the complex atmosphere of a large campus away from home.
- Failed to graduate from high school but who now desire to better their skills through further education, but have difficulty being admitted to other types of institutions with selective admissions requirements.
- For economic, family, or other reasons, must work part or full time and want to obtain further education, simultaneously, within reasonable commuting distance from home and work on a part or full time basis.
- Are culturally disadvantaged and who need maximum encouragement which develops when it becomes "the thing to do" to attend college near home at a cost they can afford.

LEGAL ROLE OF CONNECTICUT REGIONAL COMMUNITY COLLEGES

The state system of higher education is legally defined to include state-supported regional community colleges. (Chapter 178, Section 10-322). Reponsibility for their operation is vested in the board of trustees. The board of trustees has special responsibility for providing, "programs of study for college transfer, terminal vocational, retraining and continuing education leading to occupational certificates or to the degree of associate in arts and in the sciences..." (Chapter 178, Section 10-326).

The Connecticut Regional Community College was legally conceived as being a comprehensive type institution. To help in implementing this concept, the Board was authorized to appoint a regional council for each college which may advise it with respect to appropriate educational programs to meet the needs of the communities in the region. (Chapter 164, Part IIB, Section 10-38d).

A document entitled, "The Role of the Regional Community Colleges in Connecticut" dated October 17, 1968 and approved by the Board of Regional Community Colleges further defined the role of these colleges. It was stated that community colleges should offer instruction in subjects usually assignable to the categories of:

- Arts and sciences
- Business and applied arts
- Health services occupations
- Public service and social welfare occupations

Curricula emphasizing instruction in mathematics and the basic sciences are offered for students planning to transfer to senior colleges and universities in scientific and engineering fields. An important delineation of role results in the statement that, "...the Community Colleges do not duplicate the efforts of the State Technical Colleges, and do not offer associate degree programs in engineering technology." Thus, broad guidelines defining the functions and role of a community college have been legally stated. Our planning is based on the concepts of what a community college should be and on what we interpret the Connecticut statues to imply.

PREVIOUS PLANNING ASSUMPTIONS

The proposal for a long range plan for the distribution and location of community colleges on a regional basis to meet state wide needs was based upon certain key assumptions about their purposes.[5] It was assumed they would be truly community centered institutions with comprehensive programs of high quality to meet a wide range of the needs of the community's youth and adults. It was felt these comprehensive programs would serve both part time and full time students by providing strong transfer curriculums and, at the same time, by placing major emphasis on immediate career offerings to meet the occupational needs of youth and adults. Extensive evening programs for out-of-school youth and adults, including both general cultural offerings and specialized occupationally related courses for job upgrading or retraining purposes were assumed. It was assumed each college would become a cultural center for its region by providing a wide variety of activities. To achieve these objectives it was assumed that regional community colleges should maintain a flexible admissions policy under which high school graduates and those who did not graduate could have the opportunity to study. Also the college should be located within a reasonable commuting distance for all residents and have sufficient enrollment (1,000 full time students) to provide program breadth to meet the needs of the region in which it is located with optimum operating efficiency.

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[5] Orvis, P., Design for Opportunity: A Plan for a State System of Community Colleges in Connecticut, December, 1965, pp. 12-14.

A plan for establishing community colleges in 12 regions was recommended. The primary service areas of each corresponds with some consolidations and adjustments, to those of the Connecticut Development Commission Regional Planning areas. Except for a limited number of persons living along the state line in the northeastern and northwestern corners of the state, over 99 percent of all residents would live within 15 miles of a community college which would be located near the center of population in each of the 12 service areas. The districts proposed by the earlier study are shown in Figure 4.

The present study required a re-examination of the proposed 12 district plan in the light of recent conditions and factors such as topography and road systems which have been planned since the earlier study. This study goes beyond the other one in considering general areas of campus location within the district and the development and testing of models by which community college services and programs can be provided.

BASIC PLANNING ASSUMPTIONS FOR THIS STUDY

This study assumes that:

1. A properly established and developed Connecticut regional community college system will attract the same proportion of youth and adults as community colleges in other parts of the nation.

2. The state has responsibility for making equal educational opportunity available throughout the state to residents, regardless of the number of private institutions. Equality means programs appropriate to interests and demands, at costs that do not discriminate, and offered at times when and places where people can attend.

3. The roles of the state colleges and the University of Connecticut will be further defined along with community

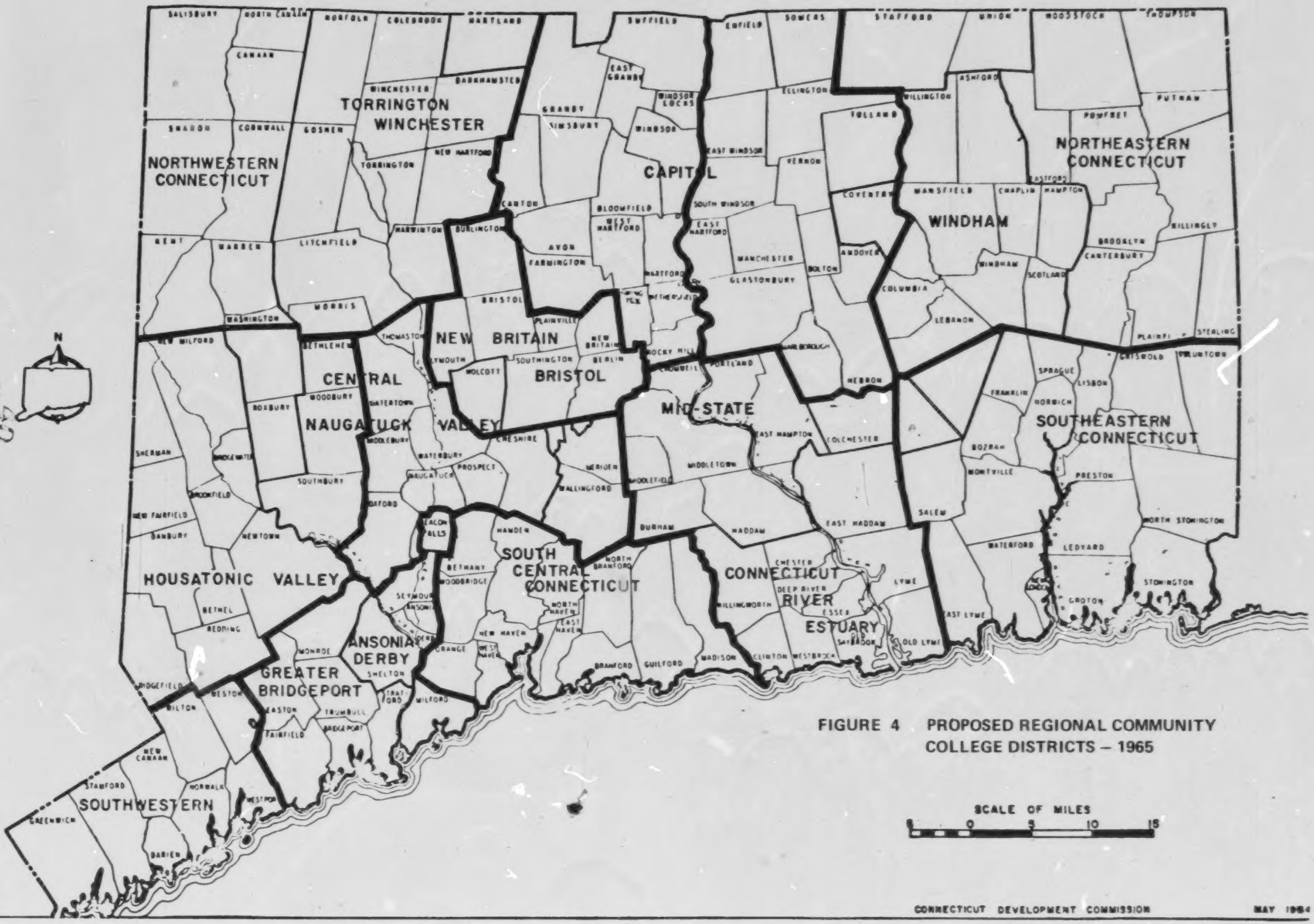
NORTHWESTERN CONNECTICUT
TORRINGTON WINCHESTER
CAPITAL
NORTHEASTERN CONNECTICUT
WINDHAM
NEW BRITAIN
BRISTOL
CENTRAL NAUGATUCK VALLEY
MID-STATE
SOUTHEASTERN CONNECTICUT
HOUSATONIC VALLEY
SOUTH CENTRAL CONNECTICUT
CONNECTICUT RIVER ESTUARY
ANSONIA DERBY
GREATER BRIDGEPORT
SOUTHWESTERN
SALISBURY
NORTH CANAAN
CANAAN
NORFOLK
COLEBROOK
HARTLAND
BARKHAMSTED
WINCHESTER
SHARON
CORNWALL
GOSHEN
TORRINGTON
NEW HARTFORD
KENT
WARREN
LITCHFIELD
HARWINTON
BURLINGTON
MORRIS
WASHINGTON
SUFFIELD
EAST GRANBY
GRANBY
SIMSBURY
WINDSOR LOCKS
WINDSOR
CANTON
BLOOMFIELD
WEST HARTFORD
AVON
FARMINGTON
HARTFORD
WETHERSFIELD
ENFIELD
SOMERS
ELLINGTON
EAST WINDSOR
SOUTH WINDSOR
EAST HARTFORD
VERNON
MANCHESTER
GLASTONBURY
BOLTON
STAFFORD
UNION
TOLLAND
WILLINGTON
ASHFORD
COVENTRY
ANDOVER
MANSFIELD
CHAPLIN
HAMPTON
EASTFORD
WOODSTOCK
THOMPSON
POMFRET
PUTNAM
BROOKLYN
CANTERBURY
KILLINGLY
WINDHAM
SCOTLAND
COLUMBIA
LEBANON
PLAINFIELD
STERLING
NEW MILFORD
BETHLEHEM
THOMASTON
PLYMOUTH
BRISTOL
PLAINVILLE
NEW BRITAIN
SOUTHINGTON
BERLIN
WOLCOTT
ROCKY HILL
CROMWELL
PORTLAND
MARLBOROUGH
HEBRON
GRISWOLD
VOLUNTOWN
SPRAGUE
LISBON
FRANKLIN
NORWICH
ROXBURY
WOODBURY
WATERTOWN
MIDDLEBURY
WATERBURY
PROSPECT
NAUGATUCK
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEFIELD
MIDDLETOWN
EAST HAMPTON
COLCHESTER
BOZRAH
MONTVILLE
PRESTON
SHERMAN
BRIDGEWATER
SOUTHBURY
BROOKFIELD
NEW FAIRFIELD
DANBURY
NEWTOWN
OXFORD
BEACON FALLS
HAMDEN
DURHAM
HADDAM
EAST HADDAM
SALEM
WATERFORD
LEDYARD
NORTH STONINGTON
BETHANY
WOODBRIDGE
NORTH BRANFORD
CHESTER
DEEP RIVER
KILLINGWORTH
ESSEX
LYME
NEW LONDON
GROTON
STONINGTON
EAST LYME
BETHEL
REDDING
SEYMOUR
ANSONIA
NORTH HAVEN
EAST HAVEN
NEW HAVEN
ORANGE
WEST HAVEN
DERBY
MONROE
SHELTON
BRANFORD
GUILFORD
MADISON
CLINTON
WESTBROOK
SAYBROOK
OLD LYME
RIDGEFIELD
WESTON
WILTON
EASTON
TRUMBULL
STRATFORD
MILFORD
FAIRFIELD
BRIDGEPORT
NEW CANAAN
STAMFORD
NORWALK
WESTPORT
GREENWICH
DARIEN
N
SCALE OF MILES
0
5
10
15

FIGURE 4 PROPOSED REGIONAL COMMUNITY COLLEGE DISTRICTS – 1965

CONNECTICUT DEVELOPMENT COMMISSION MAY 1964 colleges (ultimately amalgamated with state technical colleges) so that a complete system of public higher education will evolve wherein each unit of the system fulfills particular functions.

4. The state is primarily concerned with its obligation to the taxpaying citizens to supply educational services demanded by its citizens, regardless of the tradition of selective education for the intellectually, socially, and economically elite in non-public institutions.

5. Economic, political, sociological, and demographic factors will remain relatively stable, so past trends may be expected to continue into the future.

6. In the interest of taxpayers and the best utilization of state manpower and financial resources, attention will be given to the differentiation of role which public two-year institutions such as university branches, regional community colleges and state technical colleges will play in the immediate future.

7. A student will be free to attend a regional community college of his choice regardless of whether it is in the proposed district in which he resides.

8. A large majority of students (85-90 percent) attending each community college will reside within that proposed district.

9. Although university branches may ultimately discontinue offering freshman and sophomore level work which duplicate efforts of the developing community colleges, the present number and scope of offerings in branches will remain for some time.

MODELS

For the purpose of this study a model was defined as an arrangement for providing community college instruction in regional areas by taking into account related local conditions. The different models are described below.

Model I

One arrangement permits a community college to develop a single campus of its own, either using temporary or permanant structures constructed for the purpose, on a site of sufficient size to accommodate enrollments in the foreseeable future and capable of future expansion. This arrangement is particularly suited for instances where enrollment will probably never exceed a maximum desirable size.

Model II

Another arrangement would be to house a community college on the campus of either a privately supported community institution or a public state college or university. In this instance lease and contractual relationships could exist which would permit joint use of some existing instructional and service spaces and the joint development and utilization of others.

Model III

Another arrangement would provide a community college with multiple campuses within a single district located to serve the major centers of population. In this instance some program differentiation could be expected among the several campuses. Instructional centers may be created in addition to the regular campuses to serve high density population areas.

Model IV

The development of a central campus with one or more instructional centers is another arrangement. In a large district with several smaller but significant population centers or in a metropolitan area not large enough for two campuses, but too large for one of reasonable size, the development of outlying instructional centers is an arrangement for serving people where they are and, at the same time, limiting enrollment on the central facility. This may also be a feasible arrangement when a main campus is located some distance from the core city area and there is a need to service core city area residents with selected appropriate programs.

Model V

A community college with its own facilities, whether single or multi-campus, might, under some conditions, contract with other public or private institutions to provide instruction in specialized areas for interested students instead of offering the special curricula itself. This plan would utilize resources where they were already located without unnecessary duplication of effort and cost.

Model VI

A community college may join several educational institutions forming an educational park complex. For example, a university branch, a private two-year college, the public community college, a regional high school and a state technical college would share a common site. This possibility for joint use of services and instructional facilities and of staff may offer real economies.

ALTERNATIVES FOR PROVIDING FACILITIES

Each of the six models suggested allows for flexibility regarding the actual kind of physical plant used. We believe that

- failure to take immediate action to acquire sites and construct facilities will result in higher costs to state tax payers.
- failure to develop adequate permanent facilities and the prolonged use of temporary facilities will prevent the state's regional community colleges from serving the numbers of residents which they would otherwise serve.

In the past community colleges have been housed in a variety of plants depending upon variegated local and state conditions. Experience has demonstrated that there is a close relationship between the type and quality of physical facilities and the extent to which the college attracts the proportion of youth and adults it is capable of serving.

To give a community college immediate identity and to assist in creating a positive image during planning and construction of permanent campus facilities, instant campus relocatable facilities have been used.[6] Illinois Central Community College, Peoria, Illinois is a prime example. Use of army barracks, quonset huts, prefabricated buildings, and other temporary structures can allow considerable savings during initial building phases. However some of these temporary structures are in ramshackle condition within a decade or two, but become almost impossible to destroy because of real or imagined vested interest. Some temporary type buildings are built specifically for school use; they are more expensive than surplus buildings and usually cost less than comparable permanent structures. They offer advantages of portability, prefabricated design and self-contained air-conditioning and heating. We recommend that the master facilities plan establish definite provisions for phasing out temporary structures as new buildings are constructed.

Another common arrangement is to rehabilitate buildings such as hotels, factories, shopping centers, stores, living quarters, offices, public schools, etc., for community college use. None of these facilities, especially old public school buildings, will ever be satisfactory except as temporary expedients while financing and construction of adequate permanent facilities are phased.

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[6] Relocatable School Facilities, Educational Facilities Laboratories, 477 Madison Avenue, New York, New York.

In other instances, particularly in rural or sparsely populated areas, constraints have been exercised in starting college instruction until a campus with adequate facilities has been constructed. It is more important in these areas that the college courses begin under conditions which give it respectability and differentiate it from high school.

ESTIMATED COSTS

For construction of permanent facilities to provide for Connecticut regional community colleges, exclusive of site costs, the state will need to provide $282,800,000 - $313,600,000 to accommodate day enrollment potentials as estimated and shown in Table XXVI. An assumption used in estimating is that construction costs will approximate $7,000 per full time equivalent. Another assumption is that 150 square feet will be necessary per FTE and that construction costs would be approximately $47 per square foot. If state technical college facilities can serve as the nucleus of four campuses, this amount could possibly be reduced to $257,600,000 - $285,600,000.

Site costs vary considerably, but if present trends persist, both site and construction costs will be far more expensive in five or ten years. These estimates do not include site or site development costs. They would be in addition.

CRITERIA FOR ESTABLISHING COMMUNITY COLLEGES

Some lessons useful in present day planning have been derived from nearly 50 years of experience in public two year college establishment and development. The evolution of older community college systems has followed a similar path in different parts of the nation. More recently certain states, among them Michigan, Florida, Hawaii, Arizona, and New Jersey, have considerably shortened the evolutionary time period and the necessity of wrestling with certain types of problems that long plagued older systems groping their way for one reason or another. From this experience we have learned that the following criteria are essential to providing the most effective community college service:

1. A community college should be located within reasonable driving time (20-35 minutes) from where the people live whom it is expected to serve. Geographical distance is irrelevant; travel time will vary more according to traffic densities, condition of roads, availability of access, and weather. Three

of the four major reasons why able Connecticut youth do not go on for college education are financial.[7] An opportunity close to home represents a lessening of the financial burden.

2. There should be a potential for an approximate minimum enrollment of 1,000 full time students. This is required to provide a sufficient diversity of programs to meet interests and demands at a reasonable cost.

3. We believe, for maximum advantage, a community college campus should not be planned for over 5,000 full time equivalent students. Although there is not research evidence to document this recommendation, some authorities in the community college field believe that when a community college reaches the enrollment size of 5,000-6,000 a diminishing factor militating against the advantages of a community college in terms of complexity and size results.

4. It is essential to the success of a community college in attracting the potential numbers of youth and adults in any area that it have its own identity separate from any other institution. The community college is not just the lower two years of a four year institution--it is a different type of institution and needs to be protected from the stereotyped perception many persons have of four year colleges and universities. A community college located on the same campus or adjacent to a four year institution will inevitably be regarded as inferior and second class. Good examples are Flint Community College and Henry Ford Community College in Michigan.

5. A positive image to engender community pride and respectability is essential to effectiveness. The community college is a symbol of a region's belief in education as a sustaining force in democratic life, an expression of its aspirations, and a center of educational, cultural and recreational life. The campus plays a symbolic role within the total community it serves. The physical facilities used by the college have much to do with how residents regard it and extent to which it attracts students. Use of temporary facilities has advantages, but if plans aren't simultaneously or soon underway to develop permanent facilities, the stigma of the college being second best takes a long time to overcome. Most destructive of a positive image is to temporarily house a community college operation in a high school which is being used simultaneously by the secondary school.

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[7] Carl Nienstedt, "An Analysis of the Reasons for Not Attending College of College Able Secondary School Graduates in Connecticut," (Doctoral Dissertation). Storrs: University of Connecticut, May 1963.

6. A community college should be located as close as possible to the time-geographical center of the service area and in proximity to the greatest aggregation of population. Availability of public transportation is not important; studies and experience in other states have shown that only a very small percentage of students ever take advantage of it when it is available.

7. Each community college should be truly comprehensive in its offerings. Each should be able to offer the full range of education and training in occupational, preprofessional, and college parallel work for which there is interest or demand. For example, a student who aspires to become an engineer but learns this is over his ability should be able, without loss of face by transferring to another institution, to slide sideways in the same institution to an engineering technician program. Technicians need, as part of their preparation, general education in fields other than their areas of specialization; these are offered in a community college. Residents all over the state should have opportunity without leaving their home area to upgrade job skills, retrain for new types of work, or prepare for job entry into any one of a number of engineering technologies as well as other semi-professional or technical level occupations. In fact, each college should offer the following services and instruction:

- College parallel programs
- Occupational programs in any area for which there is a need
- General education for those persons who want it
- Job upgrading and retraining courses and programs
- Guidance and counseling services
- Community services

Not only are comprehensive community colleges needed to serve the educational needs of residents within reasonable commuting time and distance, but good ones develop a sense of unity and community citizenship among both faculty and students. In this atmosphere there are no second class citizens or programs stigmatized as inferior because they are physically separated or designed to prepare for employment. Besides financial economies that can be achieved in staffing, administration, and operation, the other points made in this section support the ultimate amalgamation of technical colleges and community colleges, and the immediate authorization for each community college to offer curricula in the engineering technologies as well as in other occupational fields.

8. A community college should develop the best liberal or general education program of which it is capable to meet the need of the students who will transfer. It should not design transfer programs geared to specific institutions, as graduates transfer to a large number of different institutions with different sets of requirements. The "Policies and Guidelines for Transfer of Students from the Regional Community Colleges to the State Colleges" represents in the opinion of ADL staff a commendable working relationship between state colleges and the community colleges.

9. A reasonable range of land area needed for a 5,000 full time student equivalent campus is as follows:[8]

	Urban (acres)	Suburban or Rural (acres)
Academic	8-10	30-37
PE fields and courts	5-14	15-30
Parking and drives	13-20	25-35
Open space	5-6	20-48
	30-50	90-150

Experience has shown that excessive costs result when, because of inadequate foresight and planning, a community college campus has to be enlarged or be removed to another site to adequately accommodate its enrollment. Any site contemplated for Connecticut community colleges should meet the minimum acreage specified above. It should not be located on a lesser size site, regardless of current political pressures or inclinations to do so.

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[8] L.E. Finlay and R.E. Lahti, A Primer for Planners, Washington, D.C.: American Association of Junior Colleges, 1967, p. 30.

CHAPTER IV

APPLICATION OF CRITERIA BY PROPOSED COMMUNITY COLLEGE DISTRICT

INTRODUCTION

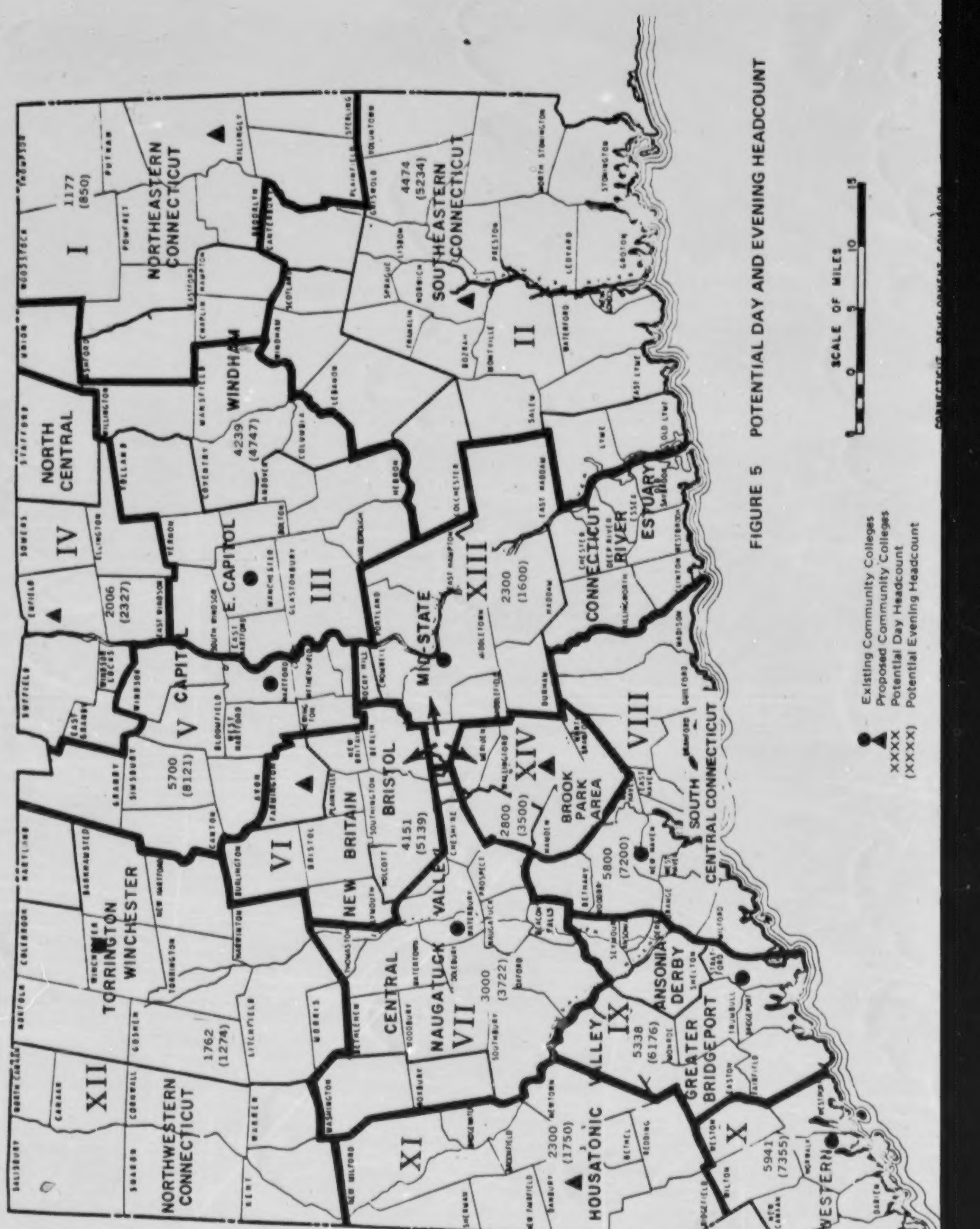
Recommendations in this section result from a detailed analysis of factors in each proposed community college district, the application of criteria outlined in Chapter III, and the projection of potential enrollment by district as detailed in Chapter VI.

Shown in Figure 5 are the proposed districts with the estimated 1985 potential head count day and evening enrollments. These forecasted head counts include students enrolled in all types of associate degree programs, including the engineering technologies, except those in branches or four year colleges. They are based on the assumptions that wherever they are located, state technical colleges and regional community colleges are amalgamated; that the communtiy colleges will be comprehensive; that community colleges will be located in adequate facilities developed for the purpose; that good programs of personnel services will be developed by community colleges; that articulation will be developed between the community college and both the high school and the employers of each area.

NORTHEASTERN

In the Northeastern Connecticut and Windham planning regions, population is sparse and road systems do not permit rapid traverse of the region. The Connecticut Turnpike runs between Norwich and a point a short distance south of Danielson where Route 52 intersects and proceeds north to the state line. Planned for the future is the replacement of present Route 6 with Interstate 84. When completed this freeway will enable residents of areas like Coventry, Mansfield, Windham or Columbia to reach either Manchester or Danielson in about the same length of time (20-30 minutes).

Within approximately a fifteen mile radius of Danielson in 1970, there is a potential community college head count day enrollment of at least 870 persons and 630 part time head count prospects. By 1985 there will be a potential day head count enrollment of 1,177 and 850 part time head counts. South and southwest of this area prospective students will likely be attracted to Mohegan Community College in the Southeastern Connecticut Region. West of the area, residents will likely attend Manchester Regional Community College.


I
1177
(850)
NORTHEASTERN CONNECTICUT
II
4474
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SOUTHEASTERN CONNECTICUT
III
E. CAPITOL
IV
2006
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NORTH CENTRAL
WINDHAM
4239
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VI
NEW BRITAIN
BRISTOL
4151
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VII
CENTRAL NAUGATUCK VALLEY
3000
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VIII
SOUTH CENTRAL CONNECTICUT
5800
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IX
VALLEY
ANSONIA DERBY
GREATER BRIDGEPORT
5338
(6176)
X
SOUTHWESTERN
5941
(7355)
XI
HOUSATONIC
2300
(1750)
XII
NORTHWESTERN CONNECTICUT
1762
(1274)
TORRINGTON WINCHESTER
XIII
MID-STATE
2300
(1600)
XIV
BROOK PARK AREA
2800
(3500)
CONNECTICUT RIVER ESTUARY
SCALE OF MILES
0
5
10
15
Existing Community Colleges
Proposed Community Colleges
XXXX Potential Day Headcount
(XXXX) Potential Evening Headcount
N

FIGURE 5 POTENTIAL DAY AND EVENING HEADCOUNT

In the Mansfield and Windham areas in the southwestern portion of the Northeastern-Windham region are the University of Connecticut and Eastern Connecticut State College to which four year oriented students from the region may commute. There is presently a void in easily accessible and community college types of educational programs in the Northeastern region. Population is expected to increase 27 percent between 1970 and 1980 in the Northeastern-Windham area.

One way of extending the educational opportunity would be for either the Manchester Community College or a new community college located in Southeastern Connecticut to establish an instructional center in Danielson with limited offerings in occupational, preprofessional, and college parallel programs. If this mode was used, Mohegan Community College would be the preferable mother institution due to ease of transportation and the fact it may ultimately encompass the present State Technical College in its offerings. If this mode of service were established as an operational practice, plans should exist for the instructional center to become an autonomous community college when enrollments reach a minimum of 1,000 full time students. A distinct important disadvantage of this arrangement is that such an operation would likely be viewed by residents as a stepchild and second best. Enrollments could be depressed by empire building inclinations of staff in the mother institution through limiting program offerings, articulation and recruitment service resources and image building efforts, including the use of inadequate makeshift temporary type facilities. An advantage would be the stimulation, articulation and development of programs at the center and the establishment of procedures whereby students would have access to a greater breadth of programs at the Mohegan College location than might otherwise be possible. Another advantage would be that, if time proved it unnecessary, the center could be discontinued more easily than a small community college with insufficient enrollment to offer more than a restricted program of instruction. We do not think the parent-offspring arrangement would be a good one for this area.

The other mode of providing community college service would be to establish an autonomous regional community college at Danielson with everyone understanding that enrollments and breadth of programs would be minimal for the first decade of existence. This mode of operation would undoubtedly appear during initial years to be relatively more expensive.

In this area it would be essential that a community college not begin operation until adequate facilities are developed. The more sparsely populated and rural the area, the more essential it is that the college begin under conditions which engender in residents civic pride, a posture of respectability, and a positive image. Nothing can be more destructive of these attributes essential to attracting enrollments, particularly among adults, than starting a community college in hand-me-down renovated old school buildings or in makeshift rehabilitated houses, stores, or other structures. Temporary instant campus facilities create a more positive image and institutional identity in an area like this provided action is underway meanwhile to develop permanent facilities.

Recommendations

We recommend for the Northeast Area that:

(1) A Regional Community College be established in the Northeastern region on the pattern of Model I. Its location should be between Danielson and Putnam, within an area not to exceed five miles west of Highway 52, and in proximity to municipal services and facilities.

(2) The process of establishment include the selection of a site and the construction of facilities to accommodate 1,500 students and a survey of educational interests and occupational aspirations of high school seniors, a cross section of parents, and high school guidance personnel in at least 12 surrounding towns prior to the opening of the college. Executives of any industries or businesses in the area should be contacted for their opinions on needs. The survey should initiate the action so results can be used to determine and verify needs for instructional programs as part of the process of planning facilities. Aside from these useful findings such a survey would begin the process of building psychological identification among residents with the prospective college.

(3) The initial survey efforts provide for the involvement of citizen representatives from each town in the primary service area.

SOUTHEASTERN

In the Southeastern Connecticut Regional Planning district, Norwich and New London have the largest concentrations of population. Norwich is much the larger at this time, and it is likely to be for some time in the foreseeable future. Ultimately, population growth is likely to occur along an East-West belt bordering on Long Island Sound and possibly between Norwich and New London or Groton. Connecticut College, and Mitchell College are located in New London and a University of Connecticut Branch is located at Avery Point south of the Groton central business district. The road to Avery Point passes by the Hess Tank Farm, a large storage deposit for petroleum products such as gasoline. The road then bisects the Pfizer Medical Research Laboratory facilities with large employee parking lots on each side of the road. The road coming out of Groton toward the Point bisects facilities used by the Electric Boat Division of General Dynamics after passing a Defense Plant, both of which generate heavy vehicular traffic congestion during certain time periods. Avery Point is unmatched for scenic beauty. It would not, however, be a desirable place to locate a public community college in the Southeast regional area for the following major reasons even if the old barracks type buildings were razed and replaced with suitable ones:

- The location will always be too far removed from the density and center of population in the region it should serve.
- Access to the location is difficult due to pedestrian and vehicular traffic congestion around the plants and parking facilities on both sides of the road; this would be even more complicated by 3,000-4,000 additional cars in the area generated by the presence of a community college.

The Thames Valley Technical College is located near the intersection of the Connecticut Turnpike and Route 82 adjacent to a regional vocational technical high school. This geographical area on the southwest side of Norwich is easily accessible to most of the southeast region. Considerable contiguous land is available at this time.

In 1960 there were more persons living in the area on the west side and adjacent to the Thames River in New London, Waterford and Montville than on the east side in Groton and Ledyard. Population projections to 1980 by the Southeastern Connecticut Regional Planning Agency indicate that while the percent of growth in Groton and Ledyard is expected to be greatest during the next decade, it is anticipated that there will continue to be more people living on the west side of the river in the towns of Waterford, Montville and New London. In 1970 the head count day potential enrollment is about 3,400, and for the evening it is about 4,500. By 1985, head count potentials will be 3,900 and 5,200 respectively.

To get a community college started in temporary quarters pending the acquisition of a permanent site and the construction of adequate facilities it would be advisable, in our opinion, to locate it in Norwich rather than on Avery Point. In Norwich, there are possibilities for temporary office and instructional spaces at a minimum of cost. Renovation of old public school buildings or other available space in Norwich for temporary use would seem a more desirable arrangement while the permanent site and facilities were being developed than any lease arrangement for 35-40 years with a commercial firm that would offer to construct buildings. The latter arrangement would likely delay selection of a permanent site and construction of facilities beyond the time when currently available adequate site locations could be obtained.

Wherever the community college is located in this region, if certain two year associate degree programs offered by Mitchell College were found to be of the quality and type desired, if their parking and instructional facilities would accommodate all the students who would elect such programs, and if there would be no more cost to the student than if the program were offered in the community college, and if the legality of contractual arrangements is unaltered, contractual relationships whereby students enrolled in the community college would receive instruction on the Mitchell College campus are a possibility.

Two major feasible alternatives for location are:

1. A comprehensive community college located on a campus designed to serve 3,500-3,900 students and developed independently with no association with any other institution. If located for best present and future access to the entire area population and situated so as to minimize travel distance time for all the region it should be somewhere midway between either New London or Groton and Norwich.

2. Since land is available adjacent to the Technical College and Vocational High School, another possibility in this area is to locate the community college site adjacent to the existing schools, thus creating an educational park as described in Model VI.

Recommendations

Our recommendations for this region are that:

(1) The Thames Valley State Technical College and the Regional Community College be consolidated ultimately into one institution and located on the same site under conditions described under Model I or Model VI.

(2) If the Regional Vocational Technical High School could take over and utilize existing Technical College facilities for program expansion beyond those currently offered, and if the Technical College program facilities could be relocated on a site as part of the community college, then a campus site midway between Norwich and either New London or Groton would be preferred. Such a location would be more centrally located and accessible to serve the future expected population, vehicular traffic and parking facilities would be dispersed, yet a midway location would still be accessible for advanced high school vocational-technical students who would desire advanced classes during their senior year or instructors who would teach at both levels. A midway location might be more identifiable with the region than a location at the edge but within the city limits of Norwich. In this case Model I would be best.

(3) If relocation of the State Technical College does not seem feasible, then Mohegan Community College should be located in such a way that the technical college facility can ultimately become one building unit among others on an expanded site at the present location to accommodate the full range of programs.

(4) If it is not expected that the regional vocational technical high school will substantially expand its enrollment or programs as population increases in the area it serves, if adequate parking space is available to serve the state technical college enrollment, the community college, and vocational technical high school, and if new and improved highway access routes to the site can be developed, there are educational and economic advantages for incorporating the present technical college facility as one unit among others on a community college campus at the location adjacent to the vocational technical high school. In this case Model VI would be applicable.

In this region either alternative location would be satisfactory and each would have a similar number of advantages and disadvantages. The time distance factor of either location is immaterial. The specific action to be recommended here would depend upon findings of a more detailed study of factors bearing upon the matter than are within the scope of this study, including those related to the "if" factors mentioned here.

CAPITOL-E-CAPITOL WINDHAM-NORTH CENTRAL

Hartford is the largest population center in the Capitol Planning Region. Currently, Manchester Community College and Greater Hartford Community College serve the region which is bisected by the Connecticut River traversing the state from north to south. When Route 84 is extended eastward as planned, the college in Manchester may be expected to attract students from Columbia, Coventry, Mansfield, and Willington in addition to other towns in the Capitol Region situated east of the river, except those near the state line north of Hartford. Present road systems make it difficult to go directly from points north of Vernon and South Windsor directly to Manchester.

The area including towns of Enfield, East Granby, East Windsor, Ellington, Somers, Windsor Locks, and Suffield are expected to experience a 34 percent population expansion by 1980 over the 1970 estimate. The entire Capitol Planning Region is expected to have a 20 percent population increase in the same period.

By 1985, there will be a community college day head count enrollment potential in the Capitol Planning Region of around 11,800 students. Part time evening head count enrollments likely will approximate 14,600 persons.

In 1970 there are an estimated 8,678 potential day students and over 10,000 potential part time evening students. The potential day head count enrollment from the Capitol Region in 1970 for campuses located in Enfield, Manchester, and Hartford are 1,093, 2,195, and 5,390 respectively. When Stafford is added to the Enfield area and four towns from western Windham are added to the Manchester area, present potential day head count enrollments are 1,188, 2,688, and 5,390, respectively. By 1985 realistic estimates of day head count potential for Enfield, Manchester, and Hartford campuses would be 2,006, 4,239, and 5,700, respectively, with potentials for part time evening head count students being 2,327, 4,747, and 8,121.

With the future completion of Route 291 and the development of Route 5 into a limited access freeway connecting East Hartford with Route 91 near Warehouse Point east of the Connecticut River there would be rapid, easy access from Enfield and adjacent areas to either the Greater Hartford or Manchester campus locations.

By 1985, if two campuses existed to serve the entire Capitol Planning Region, there could be as many head count day students as 6,100 on one campus and 5,700 on the other. During the 20 years beyond, the potential will be even larger. Planning for a three campus arrangement now in the area will make adequate provision for servicing the region for a long time to come, provided that for each campus, site size and initial construction permit suitable expansions to be made later.

Recommendations

Based upon our analysis of the factors involved we recommend that:

(1) Regional Community College campuses be developed in Enfield for 1,500 students (Model I), Hartford for 5,500 students (Model IV), and Manchester for 4,500 students (Model I).

(2) The Hartford campus be located immediately north of Hartford along Route 91, the Manchester campus be situated on the east side of Manchester accessible to Route 6 which will in the future become extended Route 84, and the Enfield campus be located in the vicinity of Thompsonville and Hazardville.

(3) That the Greater Hartford Community College consider operating a downtown instructional center (Model IV) as an adjunct to the campus offerings with programs limited to those of primary interest to working adults desiring job upgrading, retraining, and basic education.

(4) That the State Technical College be located on the Hartford Community College campus and ultimately amalgamated with it, so its programs become one division among others in the total community college organization and its building facilities one component among others for the total college.

BRISTOL-NEW BRITAIN

The Bristol-New Britain area lying only a few minutes by Route 84 southwest of Hartford is a densely populated area traversed by good roads which will become even better when the freeway system is completed. The estimated 1970 population of 222,200 is expected to increase 18 percent by 1980. Routes 291 and 66 when completed will provide easier access from the Hartford and Meriden areas.

Assuming half the potential students from Wolcott attended a college in the New Britain-Bristol area instead of Waterbury as did most from Farmington and 10 percent from Meriden, the 1980 day head count potential is 4,000 and the evening head count potential is 4,900 students. In 1970, the enrollment potential for the area is 3,000 day head count and 3,800 evening head count.

In view of present and future vehicular routes' condition and location, the position of New Britain to Bristol, and the location of the University of Connecticut Medical Center at Farmington, a campus site should be located North of Route 72 in Plainville. The site should be accessible to Route 84 yet oriented toward Farmington. A location near Route 10 between Route 202 and north of Route 72 capable of accommodating campus service and instructional facilities for 3,000-4,000 students will be needed. It should be expandable to accommodate future enrollments of up to 5,000 students.

Recommendations

We recommend that:

(1) A community college campus be selected somewhere between Bristol and New Britain with an orientation to Farmington and the developing Medical Center and only a few minutes of driving time to Route 84 (Model I).

(2) The community college cooperate closely with both those in Waterbury and Hartford in the development of occupational curricula, particularly in the engineering technologies.

NAUGATUCK VALLEY

Waterbury in the Naugatuck Valley region is the western most central Connecticut major population center. It is 20 minutes driving time southwest of New Britain and south of Torrington. Bristol is closer. Major freeway Routes 84 and 8 intersect near the center of the area, thus providing easy access from all directions except west and northwest. Traffic generated by the several sites where employees of Scovill and other manufacturing enterprises work badly congests the downtown area. However there are reasonably easy accesses to the freeway system.

ADL staff drove to Waterbury from New Milford via Routes 67, 317, and 64 in 40 minutes during a heavy blizzard when roads were covered with snow and ice. The distance time is less in better weather. By northwest-southeast routes the western and northern sides of Waterbury are accessible within reasonable driving time to most of the area not closer to Torrington. Waterbury is a 35 minute drive northeast from Danbury.

In this region are three two year colleges, one private and two public, and a University of Connecticut Branch. In the primary service area of a comprehensive community college located in or near Waterbury, will be an enrollment potential of at least 3,100 full time day head count students and 4,000 head count part time evening students by 1985. Presently the potential is for about 2,500 full time day and 3,100 evening head count students. Location of both the State Technical College and the Regional Community College should be such that their geographical orientation is to the west. With the acquisition of a site of sufficient size to accommodate service (e.g., parking) and instructional spaces for at least 3,000-4,000 students in the Community College and State Technical College and additional students enrolled in the University Branch, the three can be located in proximity.

If programs offered by Post Junior College are of the type and quality generally available in a public community college, if parking and instructional spaces will accommodate all the students who would select a given program of study offered there, if students enrolled in Mattatuck Community College can attend at a cost not to exceed that which would be required if the same programs were offered in the community college, and if legal arrangements for contractual arrangements are unaltered, there are possibilities that contractual agreements might be made so that certain selected programs could be offered on the Post Junior College Campus. Post Junior College might become part of an educational complex, thus making it administratively easier to effect such contractual arrangements.

Recommendations

Based upon our analysis of conditions in the region, we recommend that:

(1) The Mattatuck Community College and the Waterbury State Technical College ultimately be amalgamated. Facilities for the two operations combined into one should be located on the west or north-west side of Waterbury near the edge or out of the city away from the heavy downtown congested area.

(2) If a site of sufficient size to accommodate all instructional and service (parking, etc.) spaces can be located with a west-northwest orientation, we recommend that the University Branch be located there also. This arrangement could be developed into an educational park setting with advantages to all (Model VI).

(3) Since it appears that for a long time to come, one campus will be sufficient, adequate space for a site on which expansions can be made in facilities to accommodate up to 5,000 students should be developed now. In the foreseeable future, before the western more sparsely populated areas are developed residentially, facilities will be needed for 3,000-4,000 students.

SOUTH CENTRAL

In the South Central Connecticut Planning Region, New Haven is the largest population center. The major population growth area is in the north toward Meriden and Wallingford. Five colleges in this area besides the University of Connecticut Branch offer collegiate programs culminating in an associate degree. Three additional institutions, including Yale University, offer traditional degree programs.

Population in the region is expected to increase by 17 percent in 1980 over the 1970 level. Greatest growth is expected north and east of New Haven and into North Branford where the 1980 percentage increase is expected to be 34 percent over the 1970 level.

The 1970 potential day head count enrollment potential for South Central Connecticut is about 6,000 students. The evening head count potential is about 6,900 students. By 1985, the potential day head count will be approximately 7,400 and the evening head count potential is about 9,100 students. Because of the potential numbers to be served and the spread of residential and industrial development, two colleges in this region seem advisable. There are two alternatives: (1) to apply Model III and have a single college with two campuses, or (2) to apply Model I and have two separate autonomous colleges.

If New Haven or Quinnepiac Colleges offer associate degree programs of the type, emphasis and quality desired, and at times when they will accommodate students, if parking and instructional spaces will accommodate all students who would enroll in such programs in the community college, if students enrolled for these programs in the community college can attend at a cost equal to that if the same programs were offered in the community college, if legal provisions for contractual relationships remain unaltered, there are possibilities for contractual relationships between the public community colleges in the South Central Region and these colleges.

Recommendations

Based upon our analysis of the pertinent factors in the region and surrounding areas in proximity, we recommend that:

(1) Two separate autonomous colleges be established in districts roughly corresponding to those shown in Figure 5. One district (hereafter referred to as the Brook Park Area) would be composed of Wallingford, most of Meriden, Cheshire, Hamden, North Haven, and North Branford. The other district would consist of New Haven, West Haven and the rest of the area in the South Central Connecticut Planning Region not contained already in the other district.

(2) We recommend that one college, South Central Community College, be located on the west-southwest side of the New Haven Central area. This one patterned after Model IV should be accessible from Interstate 95, Route 34, and Route 15 (Wilbur Cross Parkway). This campus should be planned to accommodate 5,500 full time day students.

(3) We recommend that the second college, patterned after Model I, be located so as to accommodate the growth areas of North Haven, Hamden, and North Branford as well as other growth areas up the valley which include most of Meriden. (See section on Brook Park Area) This college should be planned for 2,800-3,000 full time day students.

(4) As the State Technical College is established consideration should be given to locating it adjacent to the community college campus, so that between them the full spectrum of technical programs in engineering technology can be offered.

(5) As a temporary measure while the permanent campus is developed, as soon as possible, the South Central Community College should be relocated from the high school facilities such as the Eli Whitney factory building.

(6) A downtown store front instructional center should be considered for serving persons there with carefully selected and limited offerings and services, primarily oriented to job upgrading and training.

BROOK PARK AREA

The Brook Park Area is used to refer to a geographical area between Meriden on the North and North Haven on the south and including parts of Cheshire, Hamden and North Branford and all of Wallingford.

This is a rapidly growing area, residentially and industrially. Presently the largest concentration of population is in the town of Meriden, but both the population and geographical center of the area designated lie to the south of Meridan.

This area is well served with traffic arteries. When Route 66 is completed, residents will be able to travel east and west as well as north and south through the Meriden-Cheshire area.

Meriden is in a favored position inasmuch as residents have about equal time distance easy access to four (4) community colleges. If recommendations of this study materialize from Meriden these college campuses would be Middletown 15 minutes, Wallingford 15 minutes, Waterbury 25 minutes, and Bristol-New Britain 20 minutes. As aptly demonstrated, the four contiguous towns in the Meriden area are "readily accessible by roadway via I-84, 66, I-91, and 15."[9] These major routes provide easy access to each of four nearby community college locations, extant and recommended. Such a plan would avoid heavy traffic congestion on highways converging in the center of Meriden by distributing it in four directions over short distances. Commuting patterns of workers show that about 79 percent living in Chesire work in New Haven, Waterbury or New Britain. Percent of workers regularly commuting to work at a proposed or existing community college location from Southington, Wallingford and Meriden are 41 percent, 34 percent and 29 percent, respectively. The trend is for increased numbers of out-commuters. (Between 1958 and 1964 percent of out-commuters increased 215 percent.)[10]

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[9] Greater Meriden Chamber of Commerce, "Study Need for Community College to Service the Greater Meriden Area," February, 1970. P.1.

A community college is needed to serve the expanding population pushing north from New Haven toward Meriden. A location in the southern part of Wallingford Town in the area south of the village of Wallingford would serve both the Meriden and North Haven areas equally as well. Residents of Southington are within a 10-15 minute drive to a community college location in the Bristol-New Britain area.

While some residents of the northern part of Meriden will find the 15 minute 9 mile drive to a community college location in Middletown or the 25-30 minute 16-20 mile drive to a community college in Waterbury, Hartford, or Bristol-New Britain, most would probably find the 7 mile 15 minute drive to a community college in Wallingford preferable. In many important civic and economic ways there are close ties between Wallingford and Meriden.

A community college in Meriden would not be located properly to serve the heavy population growth areas north of New Haven. Such a location would unnecessarily duplicate service areas of colleges in Middletown and Bristol-New Britain. In fact the effect would be detrimental to a college in the Middletown area. However, a college located in the area south of the village of Wallingford would have little effect upon Middlesex Community College, and it would be positioned best to serve the entire area between New Haven and Meriden.

Recommendations:

Based upon our analysis of all relevant factors we recommend that:

(1) There be a community college located between Wharton and Wallingford off Route 5 and accessible to both the Wilbur Cross Parkway and Interstate 91. This college should be patterned after Model I.

(2) This college be initially planned to accomodate 2,000 full time equivalent students with provisions for expansion to accommodate an additional 1,000 students.

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[10] *Ibid.*, pp. 6,11.

GREATER BRIDGEPORT

The Greater Bridgeport Regional Planning Agency, expects the increase in the total number of children to be more rapid than rate of total population growth in the Greater Bridgeport Region.[11] Population growth between 1970 and 1980 within this region is expected to vary significantly from town to town. North of the town of Bridgeport, the population is expected to grow 48 percent in Easton, 43 percent in Monroe and 22 percent in Trumbull. In Fairfield, which is west of Bridgeport, the population is likely to increase 17 percent over the ten year period, while it is expected to grow 12 percent in Stratford on the eastern side of Bridgeport. However, population in the town of Bridgeport is only expected to increase 1 percent between 1970 and 1980.

The geographic center of the primary service area for a community college in the region falls in Trumbull. Merritt Parkway and the Connecticut Turnpike provide easy southwest-northeast traverse from any part of the most densely populated area of Bridgeport. Both intersect with Route 25 running northwest through the central part of the region and scheduled for future development as a fast access route connecting Route 84 with downtown Bridgeport.

The potential community college enrollment in the Greater Bridgeport region by 1985 is 5,300 head count day students and 6,170 head count evening students. The college can be expected to serve a total of up to 12,000 individuals annually by 1985. This assumes that 70 percent of the potential in the Ansonia Derby area would attend Housatonic Community College. A college facility located in the downtown area of Bridgeport is likely to attract low socioeconomic white and non-white residents and it would be convenient to adults working in the center city area. Even if adequate parking facilities could become available, the traffic congestion generated at a downtown location would likely discourage a significant portion of the potential clientele who would otherwise take advantage of it. Lessons that can be gleaned from crowded and congested conditions around the University of Bridgeport campus would point negatively toward the creation of another similar situation, especially for a commuting college.

A community college located out of the congested downtown area will attract about the same numbers of low socioeconomic residents, white and non-white, and in addition larger proportions of all other potential clientele. There is no space at the University of Bridgeport which would provide adequately for a public community college operation.

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[11] Greater Bridgeport Regional Planning Agency, School Needs and Resources in the Greater Bridgeport Region, 1965.

Recommendations

Our recommendations for serving best the populace of the Greater Bridgeport Region in the foreseeable future are that:

(1) A community college campus should be developed on a site selected for the purpose on the north side of Bridgeport. Such a site would have ready access to both Highway 25 and the Merritt Parkway. We recommend that the community college have a comprehensive program, including engineering technologies. If the two year engineering technology programs of the Bridgeport Engineering Institute are of the type, level, and quality typically found in community colleges, if instructional and service (parking, etc.) spaces are adequate to accommodate all community college students who would select two year engineering technology programs, if legal conditions remain unchanged, and if the cost to the student would be no more than if the programs were offered at the community college, the community college might contract for certain programs in engineering technology (Model V).

(2) In addition to a facility to accommodate 5,000 students on a campus developed on the north side of Bridgeport, consideration be given to the college operating a downtown instructional center aimed primarily at job upgrading, retraining, and some selected pre-entry types of occupational education. A temporary location in the downtown area where the college could have its own facilities until such time as the major share of programs were phased onto the new campus would be preferable to locating in an old public school building or in a high school with shared facilities (Model IV). Both Models IV and V combined seem best suited for this area.

SOUTHWESTERN

The Southwestern Connecticut Region containing the major population areas of Norwalk, Stamford, Greenwich and Westport is expected to increase in population by about 24 percent in 1980 over the 1970 level. Both the Merritt Parkway and the Connecticut Turnpike traverse the region and provide easy access to both southern Connecticut and the New York City area.

A comprehensive community college in this region has a 1985 potential of 5,900 head count day students and as many as 7,350 head count part time students. In 1970, if adequate facilities were available and diverse instructional programs were in operation, the potential head count day enrollment is 4,300 students with an evening head count potential of about 5,300 students.

New Canaan and Darien lie between Norwalk and Stamford and expect population growth of 42 percent and 22 percent, respectively, by 1980 over the 1970 estimate. A large site located near Route 124 or Route 106 either in Darien south of the Merrit Parkway or in New Canaan north of the Parkway would be easily accessible to the entire area.

Recommendations

In the Southwestern Region we recommend that:

(1) The Norwalk Regional Community College and Norwalk State Technical College be ultimately amalgamated and Model IV be followed as the pattern of development.

(2) That the Community College develop instructional centers in both Stamford and Norwalk with selected programs limited primarily to those of interest to adults for job upgrading, retraining, and general cultural purposes.

DANBURY AREA

In the Danbury Area, Danbury is the largest population center. When Route 7 is replaced by a new freeway planned between Danbury and Norwalk, residents will be able to travel between the two points in 25 minutes. The same freeway will ultimately go from Danbury to New Milford. In the Housatonic Valley Planning Region and Woodbury, Southbury, Bethlehem, Roxbury and Washington there is a potential of 2,300 day head count and 1,700 evening head count students in 1985 to be served by a community college in that area. This is based on the assumption that half the students from Woodbury, Southbury, and Bethlehem would attend a college in the Housatonic Valley and half would be attracted to the Waterbury area. Another assumption is that residents in New Milford, Roxbury and Washington would be more attracted to a location in that area than to either Waterbury or to Northwestern College. There is in 1970 a potential of at least 1,500 head count day enrollment and 1,100 part time head count evening students in region.

Because there is a State College in Danbury is no reason to think that persons who normally attend a public community college have their needs met. Experience has shown the assumption that all persons desiring a college education who live near a public four year state college will go there is inaccurate. All over the country, some of the greatest needs for a community college and the most successful ones have been in locations where there is a state university or college. For example, such community colleges are Lansing Community College in the shadow of Michigan State University, Washtenaw Community College in the shadow of Eastern Michigan University and the University of Michigan, Parkland Community College in the shadow of the University of Illinois, Tucson Community College near the University of Arizona, Cuyahoga Community College three blocks from Cleveland State University and near four other four-year colleges and universities, etc., etc. These community colleges are separate from the Universities and do not share facilities.

Recommendations

In the Housatonic Valley Region we recommend the following:

(1) That there be a comprehensive community college established in the vicinity of Danbury as soon as possible on the pattern of Model I.

(2) That a community college site be located near the intersection of Interstate Highway 84 and Route 7 separate from Western Connecticut State College.

(3) That there not be either a community college or extension program of one operated anywhere else in this region.

(4) That until a community college is established in the vicinity of Danbury, residents of the Housatonic Valley area be served by existing community colleges in Torrington, Waterbury, and Norwalk.

NORTHWEST AND LITCHFIELD HILLS

Population in the Litchfield Hills and Northwestern Connecticut areas is expected to increase over the 1970 level about 17 percent by 1980. Ten years hence, approximately 62 percent of the population in the Litchfield Hills area is expected to be located in Litchfield, Torrington, and Harwinton. In 1970, Torrington has an estimated population of 31,500 and Winchester has an estimated 11,800. In driving over the area, Arthur D. Little, Inc., staff found that the largest part of the Norwestern region has greatest direct and easier access via Routes 4, 63, 272, 8 and routes feeding into them to Torrington than to Winsted, due to the hilly geographical terrain.

On an icy snowy day with road conditions very poor, ADL staff drove from the center of Torrington to New Milford in 40 minutes via Route 25. The trip can be made in less time when roads are clear. Torrington is accessible to residents of Litchfield and the area southwest to New Milford within a reasonable amount of driving time and distance, although New Milford is situated on the outer limits of such commuting range in that direction. A new freeway is under construction and partially completed between Winsted and Torrington which will permit rapid easy access of people in Winchester to a site in Torrington within 15-20 minutes of driving time. Residents who live north of Winsted up to the state line can reach Torrington in 30 minutes time. Ultimately the freeway will be extended from Winsted to Canaan thus reducing further travel time from the extreme northwest corner to a Torrington site.

A community college adequately serving this entire northwestern area could have as many as 1,700 day head count students and 1,200 part time evening students by 1985. These are realistic potentials for a college located in close proximity to the largest population concentration, oriented to best serve the area, and offering a comprehensive program of technical and semi-professional occupational programs suited to the region. In 1970, the day head count potential is about 1,300 students and the evening head count potential is 970 students.

The present site of the University of Connecticut Branch, four miles out on the northwest side of Torrington, is not large enough for a community college nor is it properly situated for that purpose. The present Northwestern Regional Community College facility, while suitable as a temporary one in which to begin, has woefully inadequate parking space, little possibility for expansion, and is not one whose appearance is likely to engender community pride and positive image beyond the village of Winsted. When one observes a map showing the Northwest Region (Northwest and Torrington-Winchester Planning Regions), the Winsted location appears to be more nearly the center of the region but in reality, because of geographical terrain and consequently road systems, Torrington is the loci of greatest practical accessibility to all parts of the entire region, especially the northwest.

Another possibility would be for the community college in Winsted and the University Branch to enter into reciprocal contractual relationships (Model V). Part of the non-occupationally oriented work would be offered for all students at the Branch location on contract. Occupationally oriented work would be offered to Branch enrollees at the community college location on contract. This novel arrangement would require a redefinition of Branch purposes. We doubt if satisfactory administrative arrangements are possible to accomplish this.

Recommendations

Our recommendations are that:

(1) A community college campus located to best serve the Northwest Region of Connecticut should be located on a site in the Torrington area, preferably on the southwestern side of the city in the general vicinity of the hospital. A less preferable alternative would be a site on the north side near the edge of the city along old Route 8.

(2) We recommend that a community college site be selected and a campus be developed for this purpose as soon as possible after the pattern of Model I. The more rural an area, the more important it is for a community college to quickly develop the kinds of programs and facilities which will be attractive to adults. Otherwise the college will be stereotyped as only for young high school graduates and those who want regular college work offered on a lower level than similar work in a four year institution. There are community colleges in sparsely populated areas that have been struggling

for years to overcome and to reshape a poor image created when it was initially permitted to function very long in poor facilities unattractive to adults by reason of prior use, location, inadequate parking space, or appearance.

MID-STATE-ESTUARY

In the Mid-State Connecticut River Estuary Regional Planning Areas west of the Connecticut River population is expected to increase 26 percent in 1980 over the 1970 level. In the West River Estuary area alone, the population increase is expected to be 32 percent by 1980 over the 1970 level. The greatest growth is expected along the Long Island Sound area of the region. East of the River, adjacent towns in this planning region are expected to experience an increase of 38 percent by 1980 over the 1970 level.

Due to geographical terrain, road systems west of the river converge from south to north in the Middletown area. Major routes are 9, 81, 17 and 9A. Several routes on the adjacent east river side intersect with Route 66 which crosses the river at Middletown. The Connecticut Turnpike provides rapid access along the southern part of the Estuary area connecting New Haven and Norwich. Residents of Lyme and Old Lyme would most probably find driving distance to Norwich more convenient than going north. However, because of terrain, residents of New Haddam and north would possibly find the routes toward Middletown more convenient until Route 82 is extended eastward as a freeway to Norwich. Then transportation to either Middletown or Mohegan Community College would be about the same. Plans exist also for the development of Route 66 into a freeway connecting Route 84 west of Meriden with Middletown and Route 2 east of Middletown.

A community college in this area has currently a potential day head count enrollment of 1,500 and a potential evening head count of 1,100. By 1985 the potential will be at least 2,300 day head count and 1,600 evening head count.

Recommendations

Our analysis leads to the following recommendations that:

(1) A Middlesex Community College campus be located north and west but adjacent to the city limits and accessible to Route 66 when it is developed as a freeway (Model I).

(2) That to provide the most economical system and to equalize educational opportunity to the entire south and southwestern region between Bridgeport and New Haven and the Connecticut River to Hartford, now and in the long range future when the area is further developed, there should be no community college located closer to Middletown than 15 miles.

CHAPTER V

TWO YEAR CERTIFICATE OR DEGREE PROGRAMS IN CONNECTICUT

INTRODUCTION AND SUMMARY

In this section facts on the present status of programs offered among several types of institutions are found. Not only do two year colleges offer and recognize the associate degree but some four year universities offer the associate degree in fields in which they may also offer the bachelor's and more advanced graduate degree. While University Branches typically have as their central purpose the provision of educational services to the population which supports the parent institutions, they represent a type of two year college opportunity. They do provide a way of extending educational resources to the people who could not otherwise take advantage of the university which their taxes support. In some instances money is saved by both student and the state when university collegiate study can be obtained close to home. The expense of building additional residential and other service facilities at the central campus location is avoided, while students do not incur costs involved with living away from home. Programs offered in the five University Branches have been included in the listings.

Several areas such as Greater Hartford, Norwalk-Stamford, and Waterbury are served by several types of public two year colleges. Some areas have none as yet.

Present enrollments in the state technical colleges and the regional community colleges combined, either full time or part time, have not begun to reach the levels they will under favorable conditions.

Observation of program offerings indicate that further development is needed particularly in the Health Sciences and Public and Social Service fields. Additional development of engineering technologies at a level less than that needed for accreditation by the Engineers Council for Professional Development should be seriously considered.

ENROLLMENTS IN STATE TECHNICAL COLLEGES AND REGIONAL COMMUNITY COLLEGES

Shown in Table VI are the official enrollments for the existing regional community colleges. The number of both full

TABLE VI

REGIONAL COMMUNITY COLLEGE ENROLLMENTS BY COLLEGE AND YEAR*

Community College and Year	Number of Students			
	Full-Time	Part-Time	Total	FTE(1)
All Colleges				
1965-66	1,196	697	1,843	1,520
1966-67	2,761	1,363	4,124	3,443
1967-68	4,534	2,176	6,710	5,622
1968-69	6,162	2,817	8,979	7,570
1969-70	8,411	4,046	12,457	10,434
Manchester				
1965-66	279	168	447	363
1966-67	737	390	1,127	932
1967-68	976	555	1,531	1,253
1968-69	1,191	620	1,811	1,501
1969-70	1,404	848	2,252	1,828
Northwestern				
1965-66	147	10	157	152
1966-67	429	165	594	512
1967-68	688	48	736	712
1968-69	771	79	850	811
1969-70	876	195	1,071	974
Norwalk				
1965-66	770	469	1,239	1,005
1966-67	1,189	516	1,705	1,447
1967-68	1,200	752	1,952	1,576
1968-69	1,327	936	2,263	1,795
1969-70	1,513	1,027	2,540	2,026
Housatonic				
1966-67	250	128	378	314
1967-68	564	347	911	738
1968-69	666	323	989	827
1969-70	1,120	506	1,626	1,373
Middlesex				
1966-67	156	164	320	238
1967-68	452	236	688	570
1968-69	646	262	908	777
1969-70	830	409	1,239	1,034

TABLE VI (Continued)

Community College and Year	Number of Students			
	Full-Time	Part-Time	Total	FTE(1)
Greater Hartford				
1967-68	366	14	380	373
1968-69	642	113	755	699
1969-70	980	280	1,260	1,120
Mattatuck				
1967-68	288	224	512	400
1968-69	622	359	981	801
1969-70	954	572	1,526	1,240
South Central				
1968-69	297	125	422	359
1969-70	734	209	943	839

*Source: Board of Trustees for Regional Community Colleges

(1) FTE - Part-time students equated to full-time (two part time equals one full-time) plus full-time students.

and part time students has annually increased. The 1969-70 full time enrollment represents 29 percent of the current potential which would be in regional community colleges if they were all established under favorable conditions. The part time enrollment approximates 14 percent of the current potential. When technical college enrollments are included, 36 percent of the state potential is now being served. Existing regional community college enrollments which are housed in facilities designed for something other than a community college provide no indication of what enrollments could be otherwise.

Distribution of full and part time enrollments are shown in Figures 6 and 7. One can observe that there were only a few towns in which there were no persons enrolled. The effect of proximity on part time enrollments is reflected in Figure 7.

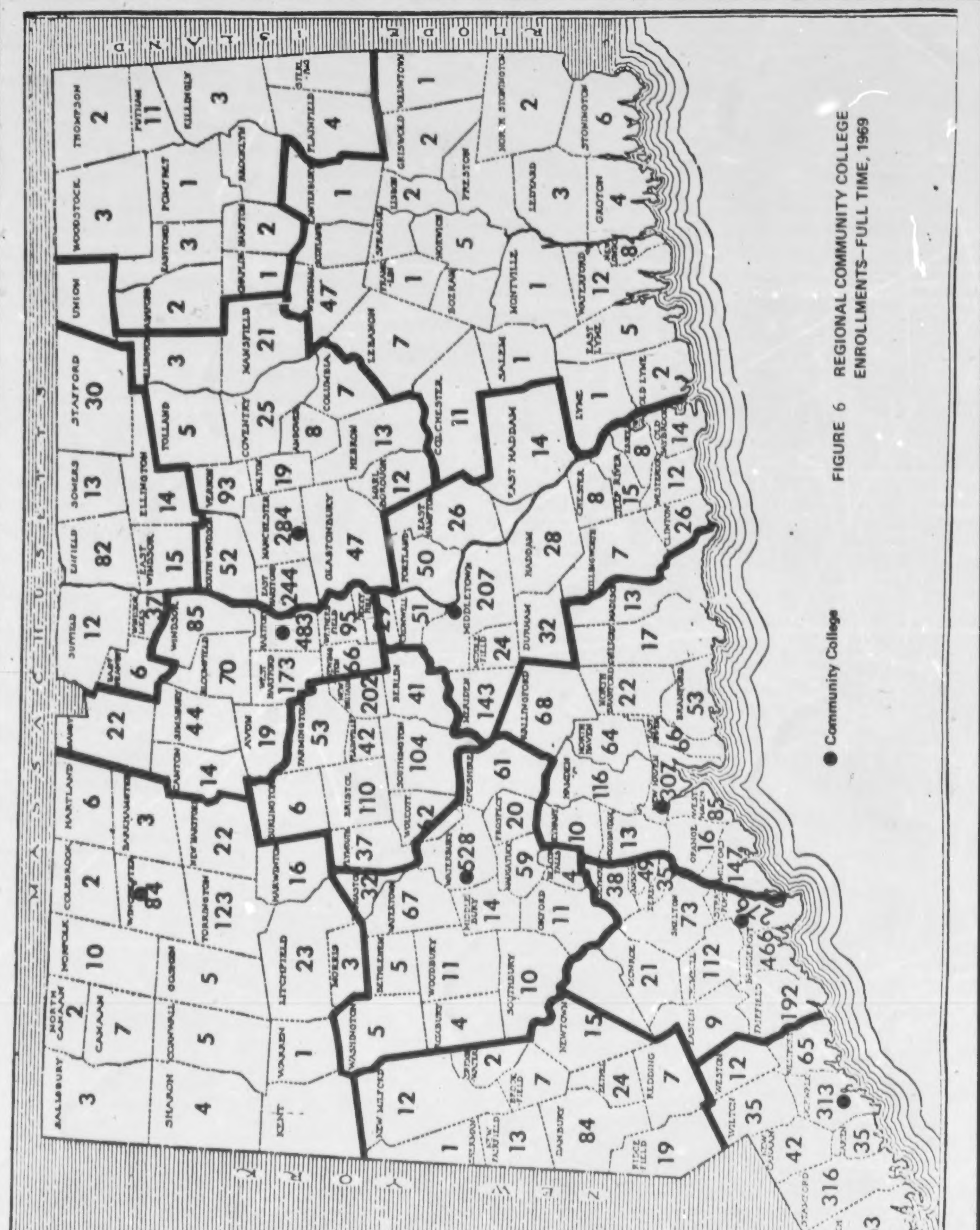
An analysis was made to determine the percent of full and part time enrollments in existing districts which were from the primary service areas (or districts) proposed by ADL staff. Results are shown in Table VII for 1968 and 1969. In general, it can be seen that the proposed ADL districts are serving primarily residents of the local areas.

Observing Table VII one can see that in 1968, 63 percent of the full time enrollment in Norwalk Community College was from the area of proposed district X shown in Figure 1. Three-fourths of the part time enrollments came from the proposed district. In 1969, 67 and 76 percent, respectively, of Norwalk Community College full and part time students resided in the district.

TABLE VII

PERCENT OF ENROLLMENT FROM PROPOSED DISTRICT

Community College	1968 Full Time	1968 Part Time	1969 Full Time	1969 Part Time
Norwalk	63	75	67	76
South Central	89	89	92	91
Northwestern	35	77	36	64
Greater Hartford	75	85	68	76
Middlesex	67	92	73	85
Mattatuck	84	89	81	86
Manchester	59	68	58	64
Housatonic	81	90	83	87


MASSACHUSETTS
NEW YORK
RHODE ISLAND
SALISBURY 3
NORTH CANAAN 2
CANAAN 7
NORFOLK 10
COLEBROOK 2
HARTLAND 6
GRANBY 22
SUFFIELD 12
ENFIELD 82
SOMERS 13
STAFFORD 30
UNION
WOODSTOCK 3
THOMPSON 2
PUTNAM 11
KILLINGLY 3
PLAINFIELD 4
VOLUNTOWN 1
NORTH STONINGTON 2
STONINGTON 6
SHARON 4
CORNWALL 5
GOSHEN 5
WINCHESTER 84
BARKHAMSTED 3
TORRINGTON 123
NEW HARTFORD 22
CANTON 14
SIMSBURY 44
EAST GRANBY 6
WINDSOR LOCKS 37
EAST WINDSOR 15
ELLINGTON 14
TOLLAND 5
WILLINGTON 3
ASHFORD 2
EASTFORD 3
POMFRET 1
BROOKLYN
HAMPTON 2
CHAPLIN 1
MANSFIELD 21
WINDHAM 47
SCOTLAND
CANTERBURY 1
SPRAGUE
FRANKLIN 1
LISBON 2
GRISWOLD 2
NORWICH 5
BOZRAH
PRESTON
LEDYARD 3
GROTON 4
NEW LONDON 8
WATERFORD 12
MONTVILLE 1
LEBANON 7
COLUMBIA 7
COVENTRY 25
ANDOVER 8
HEBRON 13
BOLTON 19
VERNON 93
MANCHESTER 284
SOUTH WINDSOR 52
WINDSOR 85
BLOOMFIELD 70
AVON 19
WEST HARTFORD 173
HARTFORD 483
EAST HARTFORD 244
GLASTONBURY 47
MARLBOROUGH 12
COLCHESTER 11
SALEM 1
EAST LYME 5
LYME 1
OLD LYME 2
EAST HADDAM 14
OLD SAYBROOK 14
ESSEX 8
WESTBROOK 12
DEEP RIVER 15
CHESTER 8
HADDAM 28
EAST HAMPTON 26
PORTLAND 50
MIDDLETOWN 207
CROMWELL 51
ROCKY HILL 27
WETHERSFIELD 95
NEWINGTON 66
NEW BRITAIN 202
FARMINGTON 53
BURLINGTON 6
HARWINTON 16
LITCHFIELD 23
WARREN 1
KENT
WASHINGTON 5
MORRIS 3
BETHLEHEM 5
THOMASTON 32
PLYMOUTH 37
BRISTOL 110
PLAINVILLE 42
BERLIN 41
SOUTHINGTON 104
WOLCOTT 42
MERIDEN 143
MIDDLEFIELD 24
DURHAM 32
KILLINGWORTH 7
CLINTON 26
MADISON 13
GUILFORD 17
BRANFORD 53
NORTH BRANFORD 22
EAST HAVEN 66
NORTH HAVEN 64
WALLINGFORD 68
CHESHIRE 61
PROSPECT 20
WATERBURY 528
WATERTOWN 67
WOODBURY 11
MIDDLEBURY 14
NAUGATUCK 59
BEACON FALLS 4
BETHANY 10
HAMDEN 116
NEW HAVEN 307
WEST HAVEN 85
WOODBRIDGE 13
ORANGE 16
MILFORD 147
ANSONIA 49
DERBY 35
SEYMOUR 38
OXFORD 11
SHELTON 73
STRATFORD
BRIDGEPORT 466
TRUMBULL 112
MONROE 21
SOUTHBURY 10
ROXBURY 4
NEW MILFORD 12
BRIDGEWATER 2
BROOKFIELD 7
NEWTOWN 15
BETHEL 24
REDDING 7
EASTON 9
FAIRFIELD 192
WESTON 12
WESTPORT 65
WILTON 35
NORWALK 313
DARIEN 35
NEW CANAAN 42
STAMFORD 316
GREENWICH 163
DANBURY 84
RIDGEFIELD 19
NEW FAIRFIELD 13
SHERMAN 1

● Community College

FIGURE 6 REGIONAL COMMUNITY COLLEGE ENROLLMENTS—FULL TIME, 1969

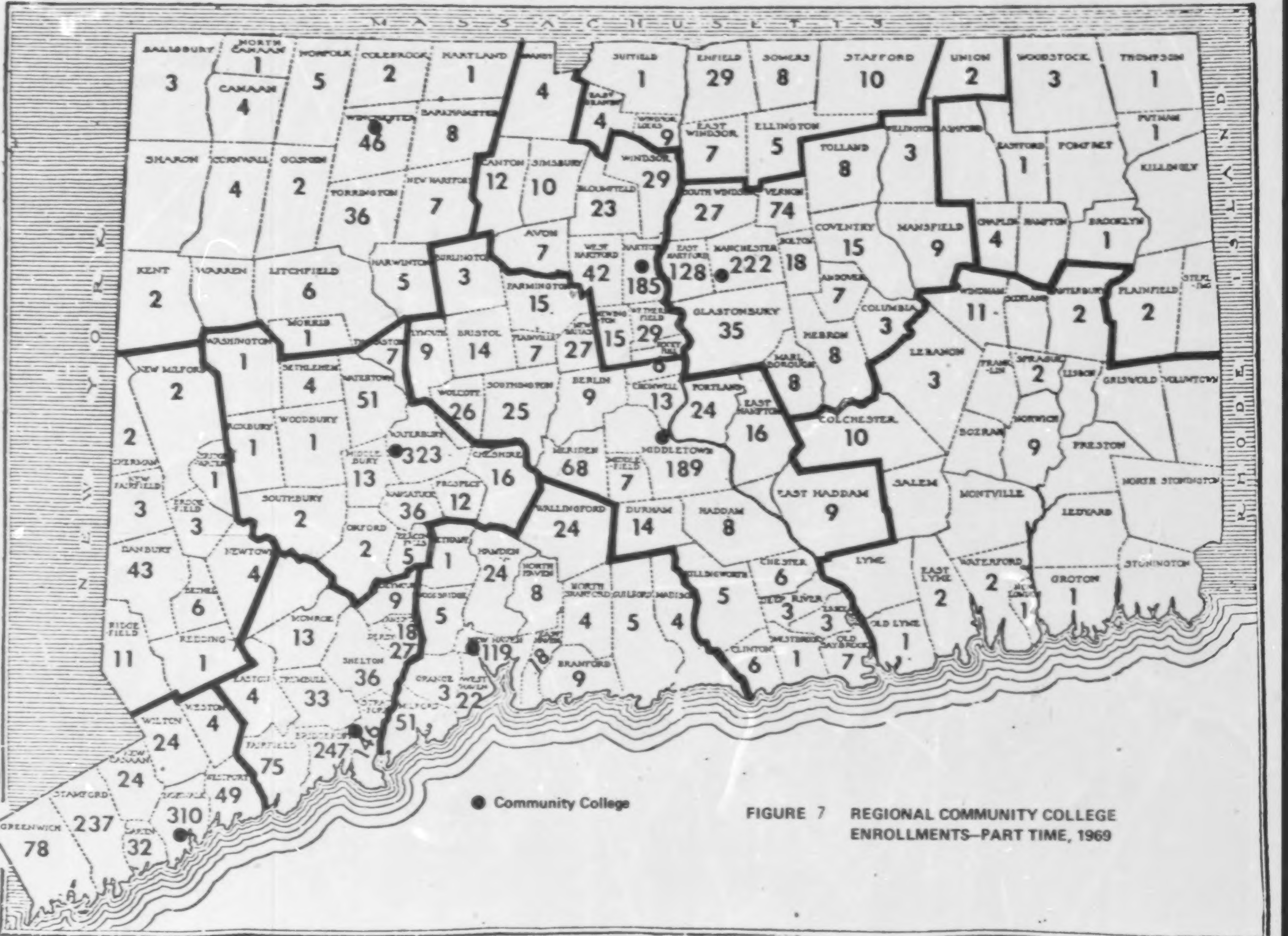

MASSACHUSETTS
NEW YORK
RHODE ISLAND
SALISBURY 3
NORTH CANAAN 1
CANAAN 4
NORFOLK 5
COLEBROOK 2
HARTLAND 1
4
SUFFIELD 1
ENFIELD 29
SOMERS 8
STAFFORD 10
UNION 2
WOODSTOCK 3
THOMPSON 1
WINCHESTER 46
BARKHAMSTED 8
EAST GRANBY 4
WINDSOR LOCKS 9
EAST WINDSOR 7
ELLINGTON 5
3
PUTNAM 1
SHARON 4
CORNWALL
GOSHEN 2
CANTON 12
SIMSBURY 10
WINDSOR 29
TOLLAND 8
ASHFORD
EASTFORD 1
POMFRET
KILLINGLY
TORRINGTON 36
NEW HARTFORD 7
BLOOMFIELD 23
SOUTH WINDSOR 27
VERNON 74
COVENTRY 15
MANSFIELD 9
CHAPLIN 4
HAMPTON
BROOKLYN 1
KENT 2
WARREN
LITCHFIELD 6
HARWINTON 5
BURLINGTON 3
AVON 7
WEST HARTFORD 42
HARTFORD 185
EAST HARTFORD 128
MANCHESTER 222
BOLTON 18
ANDOVER 7
WINDHAM 11
SCOTLAND
CANTERBURY 2
PLAINFIELD 2
STERLING
FARMINGTON 15
NEWINGTON 15
WETHERSFIELD 29
ROCKY HILL 6
GLASTONBURY 35
COLUMBIA 3
WASHINGTON 1
MORRIS 1
THOMASTON 7
PLYMOUTH 9
BRISTOL 14
PLAINVILLE 7
NEW BRITAIN 27
HEBRON 8
MARLBOROUGH 8
LEBANON 3
FRANKLIN
SPRAGUE 2
LISBON
GRISWOLD
VOLUNTOWN
NEW MILFORD 2
BETHLEHEM 4
WATERTOWN 51
WOLCOTT 26
SOUTHINGTON 25
BERLIN 9
CROMWELL 13
PORTLAND 24
EAST HAMPTON 16
COLCHESTER 10
BOZRAH
NORWICH 9
PRESTON
SHERMAN 2
ROXBURY 1
WOODBURY 1
WATERBURY 323
CHESHIRE 16
MERIDEN 68
MIDDLETOWN 189
MIDDLEFIELD 7
NORTH STONINGTON
NEW FAIRFIELD 3
BRIDGEWATER 1
MIDDLEBURY 13
SOUTHBURY 2
NAUGATUCK 36
PROSPECT 12
WALLINGFORD 24
DURHAM 14
HADDAM 8
EAST HADDAM 9
SALEM
MONTVILLE
LEDYARD
BROOKFIELD 3
DANBURY 43
NEWTOWN 4
OXFORD 2
BEACON FALLS 5
BETHANY 1
HAMDEN 24
NORTH HAVEN 8
CHESTER 6
LYME
EAST LYME 2
WATERFORD 2
NEW LONDON 1
GROTON 1
STONINGTON
BETHEL 6
SEYMOUR 9
WOODBRIDGE 5
NORTH BRANFORD 4
GUILFORD 5
MADISON 4
KILLINGWORTH 5
DEEP RIVER 3
ESSEX 3
RIDGEFIELD 11
REDDING 1
MONROE 13
ANSONIA 18
DERBY 27
NEW HAVEN 119
EAST HAVEN 18
BRANFORD 9
CLINTON 6
WESTBROOK 1
OLD SAYBROOK 7
OLD LYME 1
EASTON 4
TRUMBULL 33
SHELTON 36
ORANGE 3
WEST HAVEN 22
STRATFORD 49
MILFORD 51
WILTON 24
WESTON 4
FAIRFIELD 75
BRIDGEPORT 247
NEW CANAAN 24
WESTPORT 49
NORWALK 310
STAMFORD 237
DARIEN 32
GREENWICH 78
● Community College

FIGURE 7 REGIONAL COMMUNITY COLLEGE ENROLLMENTS—PART TIME, 1969

It can be seen that only 36 percent of the full time students in Northwestern Community College were from the proposed district XII. Many students were from the New Britain-Bristol and Greater Hartford districts. As community colleges with adequate facilities develop in those areas it will be important to have the Northwestern Community College located in proximity to the largest center of population in the Northwestern region. Manchester Community College also attracted students from other areas such as South Hartford, the North Central area, and East and South where community college services are not yet available.

Actual enrollments in the state technical colleges are shown in Table VIII. Engineering technology programs in these colleges tend to be those that are accreditable by the Engineers Council on Professional Development (ECPD). They are high level programs requiring such sophistication in science and mathematics that products of the programs can obtain high level technical positions working with engineers and scientists. Most of the nation's community colleges offering engineering technology programs do not desire to seek ECPD accreditation. The reason for this is that most of the demand in industry is for technicians trained at a lower level than those in ECPD accreditable programs. The need is for both types with major emphasis upon those programs not requiring the depth in mathematics and science necessary for ECPD accreditation.

TABLE VIII

ENROLLMENTS IN STATE TECHNICAL COLLEGES

State College	1965-66	1966-67	1967-68	1968-69	1969-70
Hartford	342	380	481	509	573
Norwalk	613	659	674	702	710
Thames Valley	261	263	304	422	486
Waterbury	327	346	465	495	549
Totals	1543	1684	1924	2128	2318

Enrollments as seen in Table VIII are considerably lower than what they usually are found to be in engineering technology programs offered as part of the total regional community college program in other areas of the country which have populations similar to those in which the state technical colleges are located. It is estimated by the State Board for Technical Colleges that in 1974-75 enrollments will approximate 4,020 to 4,175.

One disadvantage of locating technical programs in a few technical colleges separate from community colleges is the lack of proximity to where students live. Otherwise, if every community college offered one or more of these programs as need and interest exist they would be accessible throughout the state and enrollments would be greater, particularly part time evening enrollments. At present it appears that a serious void exists in Connecticut in programs between the regional vocational technical high school offerings and the high level ECPD type engineering technician programs.

TWO YEAR CURRICULAR OFFERINGS BY PLANNING REGION

Planning regions were established by the Connecticut Development Commission. The process of identification considered not only the geographical terrain and topological makeup of the state but also the propensity of people to associate for economic and social reasons. Many of the same planning factors considered in developing the planning regions are important to identifying the service boundaries of good community colleges. Therefore it is not surprising that, with some modifications where topological and transportation routes warrant, the proposed community college districts follow rather closely the planning region areas.

Two year college level certificate or degree programs are presented here by planning region, except for the consolidation of the Northwestern and Torrington-Winchester area.

Northeastern

The Northeastern Connecticut Regional Planning Area currently has available no two year educational opportunities. Annhurst College is located in Woodstock and is not known to grant associate degrees or two year certificates.

Southeastern Connecticut Region

There are four colleges and a University Branch in this region. Bachelor's and advanced degree level programs are offered in one or more of the following fields by Connecticut College or the U.S. Coast Guard Academy.

Arts and Science
Education
Engineering
Home Economics
Fine and Applied Arts

The University Branch at Groton offers undergraduate programs in the following fields:

Agriculture - 3 semesters
Business Adm. - 4 semesters
Education - 4 semesters
Engineering - 4 semesters
Fine Arts - 1 or 2 semsters
Home Economics - 3 semesters
Arts and Sciences - 4 semesters
Nursing - 2 semesters
Pharmacy - 4 semesters
Physical Education - 1 semester
Physical Therapy - 3 semesters

Certificate courses and programs are organized by the Branch on demand to promote the vocational and educational competency of persons employed in business, industry or professions.

Two year degree and/or certificate programs available in the area are shown in Table IX.

Windham Region

In this region are Eastern Connecticut State College and the University of Connecticut main campus. The Ratcliff Hicks School of Agriculture offers a two year certificate program in agriculture. Bachelor's and higher degrees are available in the following fields:

- Agriculture
- Arts and Sciences
- Business and Commerce
- Education
- Engineering
- Home Economics
- Fine and Applied Arts

While associate degrees are available in the State College, little use is made of this opportunity by students.

Capitol Region

In the Capitol Region are twelve colleges and universities and a University of Connecticut Branch. Bachelor's or higher degree level programs are offered by the following institutions:

- Hartford Seminary Foundation
- Rensselaer Polytechnic Institute of Connecticut
- St. Alphonsus College
- St. Joseph College
- Trinity College
- University of Hartford

Programs are offered by them in one or more of the following fields:

- Arts and Sciences
- Business and Commerce
- Education
- Engineering
- Fine and Applied Arts
- Home Economics
- Religion

TABLE IX

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS OFFERED IN THE SOUTHEASTERN CONNECTICUT REGION IN 1969-70

Program of Study	Mitchell College	Thames Valley State Technical College
Arts and Sciences		
Humanities	X	
Science	X	
Social Science	X	
Business, Secretarial and Data Processing		
Accounting	X	
Data Processing Technology, Computer Technology		X
General Business, Business Administration, and General Management	X	
Secretarial Studies	X	
Education		
Two Year Teacher Training and Teacher Aides	X	
Engineering		
Chemical Technology		X
Electrical Engineering/ Engineering Electronics		X
Engineering Transfer	X	
Mechanical Engineering/ Mechanical Technology		X
Tool and Manufacturing Technology		X
General Education		
General Education/General Studies	X	
Public and Social Service		
Recreation Leadership and Physical Education	X	
Social Work Aide	X	

X = Certificate or Associate Degree

Source: Connecticut Commission For Higher Education

The University Branch of Hartford offers the following programs of study:

Agriculture - 3 semesters
Business Adm. - 4 semesters
Education - 4 semesters
Engineering - 4 semesters
Fine Arts - 1 or 2 semesters
Home Economics - 3 semesters
Arts and Sciences - 4 semesters
Nursing - 2 semesters
Pharmacy - 4 semesters
Physical Education - 1 semester
Physical Therapy - 3 semesters

Certificate courses and programs are organized on demand by the Branch to promote the vocational and educational competency of employees in industry, business, and professions.

Two year degree and/or certificate programs available in the region are as shown in Table X.

New Britain-Bristol Region

In 1969-70 Central Connecticut State College offered bachelor's degrees in arts and science, education, business and commerce, accounting, and secretarial studies. Master's degrees were available in education and arts and sciences. Two year certificate or degree programs were offered in the following:

Accounting
Secretarial Studies
Marketing and Distributive Education
General Education/General Studies

Central Naugatuck Valley Region

This region has three two year colleges and a University Branch. Following are the undergraduate offerings in the Branch which may be transferred to a bachelor's degree program.

Agriculture - 3 semesters
Business Adm. - 4 semesters
Education - 4 semesters
Arts and Sciences - 4 semesters
Pharmacy - 4 semesters
Physical Therapy - 3 semesters
Engineering - 4 semesters
Fine Arts - 1 semester
Home economics - 3 semesters
Nursing - 2 semesters
Physical Education - 1 semester

Besides these offerings the University Branch organizes, usually on demand, certificate programs and courses to promote the vocational and educational competence of persons employed in business, industry, or the professions. Two year certificate and degree programs available in the region are shown in Table XI.

TABLE X

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS OFFERED IN THE CAPITOL REGION IN 1969-70

Programs of Study	Greater Hartford Community College	Hartford State Tech. College	Manchester Comm. College	Our Lady of Angels Junior College	Hartford College for Women	St. Thomas Seminary Jr. College	University of Hartford
Arts and Sciences							
General	X		X				
Humanities	X		X		X	X	
Mathematics	X		X				
Pre-Professional, Pre-Science	X		X				
Science	X		X				
Social Science	X		X			X	
Business, Secretarial and Data Processing							
Accounting	X		X				
Advertising			X				
Business Adm.- Transfer	X		X				
Data Processing Technology and Computer Technology		X	X				
General Business, Business Adm. and General Management	X		X				
Hotel-Restaurant Management			X				
Marketing and Distributive Education	X		X				
Secretarial - Dental			X				
Secretarial - Executive	X		X				X
Secretarial - Legal			X				
Secretarial - Medical			X				
Education							
Two Year Teacher Training and Teacher Aides			X	X			
Engineering							
Civil Technology		X					
Electrical Engineering/ Engineering Electronics		X					X
Engineering Aids			X				
Mechanical Engineering/ Mechanical Technology		X					
Nuclear Technology		X					
Tool and Manufacturing Tech.		X					

TABLE X (Continued)

Programs of Study	Greater Hartford Community College	Hartford State Tech. College	Manchester Comm. College	Our Lady of Angels Junior College	Hartford College for Women	St. Thomas Seminary Jr. College	University of Hartford
General Education							
General Education/General Studies	X		X				
Health Science							
Dental Office Assistant/ Dental Hygiene			X				
Inhalation Therapy Assistant			X				
Medical or Biological Laboratory Technician or Medical Technology			X				
Occupational Therapy Assistant			X				
Surgical Technician			X				
Public and Social Service							
Correctional Assistant			X				
Police Technology and Law Enforcement			X				
Public Administrative Ass't.			X				

Source: Connecticut Commission For Higher Education

TABLE XI

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS IN THE CENTRAL NAUGATUCK VALLEY REGION IN 1969-70

Program of Study	Mattatuck Community College	Post Junior College	Waterbury State Technical College
Arts and Science			
General	X		
Humanities	X	X	
Mathematics	X		
Pre-Professional	X		
Science	X		
Social Science	X	X	
Business, Secretarial, and Data Processing			
Accounting	X	X	
Business Adm.-Transfer	X		
Data Processing Technology and Computer Technology			X
General Business, Business Adm. and General Management	X	X	
Marketing and Distributive Education	X	X	
Secretarial-Executive	X		
Secretarial-Medical		X	
Secretarial Studies	X	X	
Education			
Two-Year Teacher Training and Teacher Aide	X	X	
Engineering			
Chemical Technology			X
Electrical Engineering/ Engineering Electronics			X
Mechanical Engineering/ Mechanical Technology			X
Tool and Manufacturing Technology			X
General Education			
General Education General Studies	X		
Health Science			
Mental Health Worker	X		
Public and Social Service			
Social Service Aide	X		

X = Certificate or Associate Degree
Source: Connecticut Commission For Higher Education

South Central Connecticut Region

The eight institutions of higher education in this region are:

1. Albertus Magnus College
2. Berkeley Divinity College
3. Mt. Sacred Heart College
4. New Haven College
5. South Central Community College
6. Southern Connecticut State College
7. Yale University
8. Quinnepiac College

Degrees at the bachelor's and higher levels are offered in institutions numbered 1, 2, 4, 6, 7, and 8 above and in one or more of the following fields:

Arts and Sciences
Business and Commerce
Education
Engineering
Fine and Applied Arts
Religion

Five institutions offer educational programs culminating in a certificate or Associate Degree upon completion of two years. Bachelor's degrees are also offered in some fields in which recognition is given by a credential at the end of two years and these fields are designated by an asterisk in Table XII.

Greater Bridgeport Region

The five higher education institutions in this area are:

Bridgeport Engineering Institute
Fairfield University
Housatonic Community College
Sacred Heart University
University of Bridgeport

Fairfield and Sacred Heart Universities and the University of Bridgeport offer programs leading to the bachelor's, or higher, degree without a certificate, degree or diploma issued after two years of study. Fields are:

Arts and Science
Agriculture
Business and Commerce
Education
Engineering
Fine and Applied Arts

Four institutions offer two year certificate or Associate Degree programs, and in some fields a bachelor's degree is also offered. These are shown in Table XIII.

Southwestern Region

This region has five colleges and a University of Connecticut Branch. Saint Basil's College and the College of Notre Dame of Wilton offer bachelor's degrees in Arts and Sciences

TABLE XII

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS* OFFERED IN THE SOUTH CENTRAL CONNECTICUT REGION IN 1969-70

Program of Study	Mt. Sacred Heart College	New Haven College	South Central Comm. College	Southern Conn. State College	Quinnepiac College
Arts and Science					
General			X		
Humanities	X		X	X*	
Mathematics			X		
Pre-Professional, Pre-Science					X
Science			X	X*	
Social Science	X			X*	
Business, Secretarial and Data Processing					
Accounting		X*	X		X*
Business Administration-Transfer			X		
Data Processing Technology and Computer Technology					X
Food Service Administration			X		
General Business, Business Adm. and General Management		X*	X		X*
Insurance Banking and Real Estate					X
Marketing and Distributive Education					X*
Secretarial-Executive			X		
Secretarial-Legal			X		X
Secretarial-Medical			X		X
Secretarial-Technical					X
Secretarial Studies					X
Education					
Two-Year Teacher Training and Teacher Aides	X				
Engineering					
Electrical Engineering/ Engineering Electronics		X*			
Industrial and Management Engineering		X*			
Mechanical Engineering/ Mechanical Technician		X*			
Metallurgical Engineering		X			

TABLE XII(Continued)

Program of Study	Mt. Sacred Heart College	New Haven College	South Central Comm. College	Southern Conn. State College	Quinnepiac College
General Education					
General Education/General Studies		X	X		X
Graphic Arts					
Graphic-Commercial Art		X			
Health Science					
Cardiological					X
Cytotechnology					X
Inhalation Therapy Assistant					X
Radiologic Technology (X-Ray Technician-Radiology)					X
Journalism					
Journalism		X			
Public and Social Service					
Child Care			X		
Police Technology and Law Enforcement		X*			

* X = Certificate or Associate Degree.
X* = Associate and also Bachelor Degrees.

Source: Connecticut Commission For Higher Education

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TABLE XIII

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS* OFFERED IN THE GREATER BRIDGEPORT REGION IN 1969-70

Program of Study	Bridgeport Engineering Institute	Housatonic Community College	Sacred Heart University	University of Bridgeport
Arts and Sciences				
General		X		
Humanities		X	X	X*
Mathematics	X			
Pre-Professional, Pre-Science		X		
Science		X		X*
Social Science		X	X	X*
Business, Secretarial and Data Processing				
Accounting		X	X*	
Business Administration-Transfer		X		
Data Processing Technology, Computer Technology		X		X*
Fashion Merchandising				X*
General Business, Business Administration and General Management		X		X
Secretarial-Executive		X		
Secretarial-Medical				X
Secretarial Studies		X		X*
Education				
Two-year Teacher Training and Teacher Aides				X
Engineering				
Design Engineering	X			
Electrical Engineering/ Engineering Electronics	X*			
Engineering Aide		X		
Mechanical Engineering/ Mechanical Technician	X*			X
Fine Arts				
Painting-Sculpture				X
General Education				
General Education/ General Studies		X		X

TABLE XIII (Continued)

Program of Study	Bridgeport Engineering Institute	Housatonic Community College	Sacred Heart University	University of Bridgeport
Health Science				
Dental Office Assistant or Dental Hygiene				X
Medical or Biological Laboratory Technician or Medical Technician		X		X*
Nursing and/or Public Health Nursing				X*
Public and Social Service				
Urban Assistant		X		

X = Certificate or Associate Degree
X* = Associate and Bachelor's Degrees
Source: Connecticut Commission For Higher Education

and the latter has a program in Education. Neither offer a two year certificate or degree program.

The University Branch undergraduate offerings are as follows:

Agriculture - 3 semesters
Business Admn. - 4 semesters
Education - 4 semesters
Engineering - 4 semesters
Home Economics - 3 semesters
Fine Arts - 1 or 2 semesters
Arts and Sciences - 4 semesters
Nursing - 2 semesters
Pharmacy - 2 semesters
Physical Education - 1 semester
Physical Therapy - 3 semesters

Certificate courses and programs are organized on demand by the Branch to promote the educational and vocational competence of persons employed in business, industry and professions. Two year degree and/or certificate programs offered in the region appear on Table XIV.

Housatonic Valley Region

Western Connecticut State College at Danbury offers bachelor's degrees in Arts and Science, Business and Commerce, and Education. A master's degree is offered in Education. While associate degrees are available in the State College, little use is made of this opportunity by students.

Litchfield Hills and Northwestern Regions

In this region are a University of Connecticut Branch, and a regional community college. Available at the Branch are the following undergraduate programs:

Agriculture - 3 semesters
Business Ad. - 4 semesters
Education - 4 semesters
Engineering - 4 semesters
Fine Arts - 1 semester
Home economics - 3 semesters
Arts and Science - 4 semesters
Nursing - 2 semesters
Pharmacy - 4 semesters
Physical Education - 1 semester
Physical Therapy - 3 semesters

Certificate courses and programs to promote the vocational and educational competence of employed persons in business, industry, and professions are organized by the Branch on demand. Bachelor's degree programs are available at Annhurst College in Education, Business and Commerce, and Arts and Science. Two year certificate and degree programs offered in the region are shown in Table XV.

Mid-State Region

Bachelor's degrees are offered in Arts and Sciences

TABLE XIV

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS CURRICULA OFFERED IN THE SOUTHWESTERN REGION IN 1969-70

Program of Study	Norwalk Community College	Norwalk State Technical College	Silvermine College of Art
Arts and Science			
General	X		
Humanities	X		
Science	X		
Social Science	X		
Business, Secretarial and Data Processing			
Accounting	X		
Business Administration--Transfer	X		
Data Processing Technology, Computer Technology	X	X	
General Business, Business Administration, General Management	X		
Marekting and Distributive Education	X		
Secretarial--Executive	X		
Secretarial--Legal	X		
Secretarial Studies	X		
Transportation	X		
Engineering			
Chemical Technology		X	
Electrical Engineering/ Engineering Electronics		X	
Electromechanical Technology		X	
Mechanical Engineering/ Mechanical Technology		X	
Metallurgical Engineering		X	
Tool and Manufacturing Technology		X	
Fine Arts			
Painting-Sculpture			X
General Education			
General Education/General Studies	X		
Graphic Arts			
Graphic Arts & Commercial Art			X
Photography			X

TABLE XIV (Continued)

Program of Study	Norwalk Community College	Norwalk State Technical College	Silvermine College of Art
Health Service			
Inhalation Therapy Assistant	X		
Nursing and/or Public Health Nursing	X		
Public and Social Service			
Police Technology and Law Enforcement	X		
Public Administration Ass't.	X		
Social Service Aide	X		

Source: Connecticut Commission For Higher Education

TABLE XV

ASSOCIATE AND CERTIFICATE PROGRAMS IN THE TORRINGTON-WINCHESTER REGION IN 1969-70

Program of Study	Northwestern Connecticut Community College
Arts and Sciences	
General	X
Humanities	X
Mathematics	X
Science	X
Social Science	X
Business, Secretarial, and Data Processing	
Accounting	X
Business Administration-Transfer	X
General Business, Business Administration and General Management	X
Insurance, Banking, and Real Estate	X
Marketing and Distributive Education	X
Secretarial - Executive	X
Education	
Two-Year Teacher Training and Teacher Aides	X
Fine Arts	
Fine Arts - General - Transfer	X
General Education	
General Education - General Studies	X
Public and Social Service	
Library Technical Aid	X
Police Technology and Law Enforcement	X
Recreation Leadership and Physical Education	X

Source: Connecticut Commission For Higher Education

at Holy Apostles Seminary and at Wesleyan University. Middlesex Community College is located at Middletown. Wesleyan University offers degrees also in Education, Religion, and Fine and Applied Arts. Two year college degree or certificate programs are shown in Table XVI.

TABLE XVI

ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS OFFERED IN THE MID-STATE REGION IN 1969-70

Program of Study	Middlesex Community College	Wesleyan University
Arts and Science		
General	X	
Humanities	X	X
Pre-Profession, Pre-Science	X	
Science	X	
Business, Secretarial, and Data Processing		
Accounting	X	
Business Administration - Transfer	X	
General Business, Business Adm., and General	X	
Marketing and Distributive Education	X	
Secretarial-Legal	X	
Secretarial-Medical	X	
Engineering		
Engineering-Transfer	X	
General Education		
General Education, General Studies	X	
Health Science		
Cardiological Technician	X	
Radiologic Technology (X-Ray Technician - Radiology)	X	
Public and Social Service		
Public Administration Assistant	X	
Public Service Assistant	X	

Source: Connecticut Commission For Higher Education

CHAPTER VI

ESTIMATES OF COMMUNITY COLLEGE ENROLLMENT POTENTIAL

INTRODUCTION AND SUMMARY

The growth in numbers of students attending higher education institutions during the past decade in the United States has been remarkable. Public supported two year junior or community colleges have developed most rapidly in many states. With the opening of several additional community college campuses in recent years, Connecticut has begun to participate in this growth to a much greater extent than at any previous time.

The purpose of this chapter is to provide estimates of the community college enrollment potential for Connecticut based on the premise that this educational service will be established in every area within the state as proposed by the plan. Since the community college system in Connecticut has not yet reached its potential, the enrollment forecasts presented are considerably higher than the trend in recent enrollment experience. Many of the factors and decisions that will affect the rapidity with which the potential is reached are difficult to accurately predict. Therefore, we did not attempt to estimate the phasing of actual expected enrollment growth to the time when potential will be reached for either the existing institutions or for any new colleges. However, these estimates of potential enrollment will give a good indication of the general range of enrollments that should be expected in a well developed state wide system of mature public community colleges.

The following four points were instrumental in developing the philosophy and procedures used in estimating enrollment potential:

- Community college enrollments cannot be projected solely on the basis of high school graduates because many students come from other parts of the general population.
- As a corollary to the above, community colleges tend to attract more students from the "general population" than does any other form of higher education.
- Community colleges tend to generate their own enrollment more than any other institution of higher education. Consequently, the numbers of people going to all forms of higher education from any given area will be higher

if a community college is located in the area, regardless of the presence of any other institutions of higher education.

- Our estimates developed for Connecticut also include the type of student who is presently enrolled in the state technical colleges. In the fall of 1969, there were 2,318 students in the four state technical schools.

METHODS OF ENROLLMENT PROJECTION

Several methods have been used throughout the country to predict future community college enrollments such as establishing ratios of community college enrollments to total population size, to numbers of students enrolled in grades 9-12, to numbers of youth age 17-24, to numbers of high school graduates, and estimating proportions of high school graduates that would enroll in a community college and continue through the sophomore year. Another method would stem from estimates of projected resident enrollments in all higher education institutions in the state with proportions allocated to community colleges. The latter two methods are found by our experience to be least reliable.[12]

In this study, three methods for estimating Connecticut's enrollment potential were employed.

Alternative I

This alternative is, in our opinion, the most reliable. It relates community college enrollment to the total enrollment in grades 9-12 of high schools in the primary college service area.

Alternative II

This alternative applies an estimated ratio of annual rate of enrollment per each one thousand population in Connecticut to the population within each of the planning districts.

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[12] Three alternative procedures have been used to make estimates of enrollment potential at the state level. Two of these three were also used to make estimates for each of the planning districts in the state. One of the alternatives is based on total population and the other two on secondary school enrollments in the individual areas serviced by the colleges.

TABLE XVII

SUMMARY OF THE ESTIMATES OF COMMUNITY COLLEGE ENROLLMENT POTENTIAL
STATE OF CONNECTICUT, 1965-1985

Year	Full Time Equivalent Students: 15 Credit hours per student	Full Time Equivalent Students: Connecticut Defination	Headcount Students	Student Contact Hours (18 hours per 15 credit FTE Student)
1965	--	1,520(2)	1,843(2)	--
1966	--	3,443(2)	4,124(2)	--
1967	--	5,622(2)	6,710(2)	--
1968	5,997(1)	7,571(2)	8,979(2)	107,937(2)
1969	8,644(1)	10,434(2)	12,457(2)	155,589(2)
1970	46,481	--	82,339	836,658(3)
1975	52,150	--	92,340	938,700(3)
1980	57,480	--	101,748	1,034,640(3)
1985	62,485	--	110,578	1,124,730(3)

(1) Estimated from Student Contact Hours.

(2) Actual, Board of Trustees, Regional Community Colleges, Hartford.

(3) Estimated from FTE Students.

Source: 1965-1969, Board of Trustees of Regional Community Colleges.

Alternative III

Alternative III yields enrollment potential at the state level using ratios of the numbers of high school graduates in the state expected to attend community colleges.

SUMMARY OF POTENTIAL ENROLLMENTS

A summary of the estimates of community college enrollment potential appears in Table XVII for the state of Connecticut for the years 1970, 1975, 1980, and 1985. Included in these estimates are the total full time equivalent students (FTE) total headcount students, and total student contact hours.[13] Also included are the actual community college enrollments for the years 1965 to 1969. As can be seen, the public supported community college potential for Connecticut is substantially greater than recent enrollments.[14]

Shown in Table XVIII are the estimated potential enrollments of day head count and evening head count students for 1970 and 1985. Differences between present enrollment levels and the 1970 potentials are due to recency of establishment, lack of favorable conditions including adequate housing facilities, and the fact not all colleges have yet been established.

Enrollment projections by the Commission for Higher Education of full time undergraduates only in Connecticut regional community colleges and technical colleges were as follows:[15]

1970 - 13,055
1975 - 24,450
1980 - 30,600
1985 - 30,600

If it is assumed that these projections represent 70 percent of

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[13] The state of Connecticut defines an FTE student as any student that takes more than twelve units credit (whether it is twelve or twenty) or any two students taking less than twelve units (whether it is one or eleven). We are defining an FTE student as a student taking fifteen units of credit or the total of all credits at a college divided by fifteen. We feel that this is a more precise definition of FTE.

[14] However, if the enrollments in the state technical schools, several of the appropriate private two year colleges, and the associate degree programs at the University of Bridgeport are added to the state public community colleges, the difference between the potential for 1970 and the actual in 1969 is reduced by a considerable amount.

[15] Research Department, Commission for Higher Education, Hartford, Connecticut, March, 1970

TABLE XVIII

ESTIMATED COMMUNITY COLLEGE HEAD COUNT POTENTIAL ENROLLMENTS BY AREA

Area	Day		Evening	
	1960	1985	1970	1985
Northwestern	1,339	1,762	970	1,274
Greater Hartford	5,390	5,700	6,673	8,121
Capitol East	2,688	4,239	3,074	4,747
North Central	1,188	2,006	1,354	2,327
South Central	6,225	7,628	7,095	9,324
Mid-State-Estuary	2,300	3,000	2,000	2,600
Southeastern	3,377	4,474	3,911	5,234
Northeastern	870	1,177	630	850
Southwestern	4,328	5,941	5,358	7,355
New Britain-Bristol	3,119	4,151	3,997	5,139
Central Naugatuck	2,597	3,385	3,217	4,190
Greater Bridgeport	4,239	5,338	4,920	6,176
Housatonic Valley	1,500	2,300	1,100	1,750
Totals*	39,160	51,101	44,299	59,087

* When estimating potentials in portions of planning regions located in a given proposed community college district the assumption was made that the proportion of projected potential enrollment in the portion would be directly related to the proportion which population in the portion was to the total population of the planning region. While this is not an entirely accurate assumption because of age structure differences, it is usable for the purpose intended. Thus totals differ slightly from totals of the actual projections and differences are spread over the 13 areas.

total full time equated enrollments (30 percent equal part time enrollments equated full time), estimates would be 18,642, 34,928, 43,714, and 43,714 for 1970, 1975, 1980, and 1985, respectively. A difference of 18,771 full time equivalent students exists between our projections and those of the Commission for Higher Education for 1985. Our projections are realistic potentials, assuming conditions specified above for providing community college and technical education, whereas the Commission estimates may have considered the rapidity with which favorable conditions, including physical facilities, may become available. We consider our potential estimate of 62,485 day and evening FTE students by 1985 conservative and would not be surprised if they reached 72,000 in 1985 if conditions assumed prevail.

The rest of the chapter discusses the enrollment estimates and the procedures used to derive them.

URBAN AND NON-URBAN PLANNING REGIONS

Facility planning is usually based on enrollment in day programs and the ratio of day students to total student body varies by whether the district is an urban or non-urban one.

While it is true that Connecticut has a relatively high overall population density, there are some areas in the state that are definitely non urban. Therefore, for alternatives I and II, we have divided the planning districts within the state into urban and non-urban categories. We feel that the main difference between the two categories will be as follows:

- Urban planning districts will have more students attending a community college per unit of measurement, be it population, high school graduates, or secondary school enrollment, than the non-urban districts.
- Urban planning districts will have a larger percentage of the total student body in the night program.
- The above implies that, while the day program in urban and non-urban districts will draw about the same proportion of students from the population being serviced, the proportionately larger enrollments in the urban areas result from a much larger night program.

We also realize that the separation between urban and non-urban districts in Connecticut may be much less pronounced than we have assumed. We feel that an effort to point out these types of potential differences between campus locations has value for our purpose. Accordingly, we have made the following breakdown between urban and non-urban planning districts.[16]

Urban	Non-Urban
Capital	Connecticut River Estuary
Central Connecticut	Housatonic Valley
Central Naugatuck	Litchfield Hills
Grater Bridgeport	Midstate
South Central	Northeastern
Southeastern	Northwestern
Southwestern	Valley
	Windham

SUPPORTING DETAIL FOR ENROLLMENT PROJECTION ALTERNATIVE I

USEFULLNESS OF ALTERNATIVE I

Experience of our staff in making community college enrollment projections over the past fifteen years corroborates research findings that the most reliable method is based upon relating forecasts to enrollments in grades 9-12 of high schools in the primary college service area. The size of the college freshmen and sophomore enrollment (full time equivalents) will be approximately a fourth to a third of the total enrollment in grades nine through twelve. This ratio does not hold in sparsely populated areas where distances are great enough to discourage enrollments on a part-time basis among working adults. Neither is it appropriate for rural agricultural areas, areas where level of education among the populace is low, or areas in which parents' aspirations regarding post-high school types of education for their children is low.

Achieving this ratio also assumes that community college programs have been developed to meet a diversity of technical and semi-professional occupational needs in addition to pre-professional and university parallel general education offerings, that adequate facilities are available, that good guidance and counseling programs are functioning effectively, and that the college has developed an identity and a positive image. Various other factors influence this ratio such as length of time the institution has been in existence, the number of part-time students attracted, the amount of tuition and fee charge, the accessibility of other educational services, the philosophy of education held by the staff and the administration, previous post-high school attendance patterns and

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16 Planning Districts as defined by the Connecticut Interregional Planning Commission.

the scope of programs and services.

Experience in other states such as Illinois and Michigan indicates that, under favorable conditions, initial full time equated enrollments may be expected to approximate 10-15 percent of the enrollments in grades 9-12. As a community college continues to develop and improve, it experiences growth at the rate of about 2 percent per year.

CONNECTICUT ELEMENTARY AND SECONDARY SCHOOL ENROLLMENT PROJECTIONS

As part of using alternative I, elementary and secondary school enrollments were analyzed and enrollments in grades 9-12 forecasted.

The October enrollments and historical progression rates for the public schools in the state of Connecticut are presented in Table XIX for the years 1963-1968. The progression rate is the ratio at which a particular class progresses to the next highest grade the following year. They were determined for each class by dividing the the number of students in each grade by the number of students in the grade immediately lower for the previous year. Enrollments were not available at the state level for 1964 or for years prior to 1963. Estimated enrollments were made for 1964 by taking the midpoint between the enrollments of an individual class in 1963 and 1965. (For example, if there were 20,000 students in first grade in 1963 and 23,000 students in the third grade in 1965, we estimated that there would have been 21,500 students in the second grade in 1964).

Shown in Table XX are projected public school enrollments to 1985. They are based on the weighted average progression rates for the years 1963-1968 and the actual head count enrollments in all Connecticut public schools for the fall, 1968. The historical progression rates were weighted by a simple numeric value so that the rates for each succeeding year have more value than the rates for the previous year. This was done by multiplying the first year by one, the second year by two, and so forth up to the last year, and then dividing the sum of the weighted rates by the sum of the weights to get the average rate for each grade. Numbers of youth in grades 9-12 of public schools are expected to increase about 38 percent between 1970 and 1985 when approximately 240,000 youth will be enrolled in those grades.

No effort was made to fill in grades in future years that were not a direct product of this average rate times the number of students in school in 1968. Therefore, kindergarten

TABLE XIX

ENROLLMENTS BY CLASS AND PROGRESSION RATES FOR PUBLIC SCHOOLS STATE OF CONNECTICUT, 1963-1968

	October 1st Enrollment for Year						Weighted
Grades	1963	1964	1965	1966	1967	1968	Average
Kind.	48,629	(51,000)	51,005	53,061	52,589	56,415	
Rate	1.127	1.075	1.076	1.037	1.046	--	1.059
1st	53,768	(54,800)	54,853	54,869	55,013	55,017	
Rate	.965	.930	.929	.935	.951	--	.940
2nd	48,116	51,900	50,989	50,977	51,323	52,315	
Rate	.991	.963	.978	.991	1.005	--	.989
3rd	46,416	47,675	49,962	49,859	50,498	51,582	
Rate	1.000	.991	1.001	1.022	1.017	--	1.011
4th	44,368	46,396	47,234	50,007	50,949	51,377	
Rate	.990	1.000	1.000	.999	.998	--	.998
5th	42,348	43,946	46,375	47,219	49,937	50,862	
Rate	.988	.990	.989	.990	.992	--	.990
6th	41,484	41,859	43,523	45,853	46,762	49,525	
Rate	.991	.988	.994	.993	.998	--	.994
7th	38,691	41,121	41,369	43,244	45,562	46,656	
Rate	1.022	.991	1.007	1.005	1.002	--	1.004
8th	36,524	39,547	40,757	41,638	43,469	45,649	
Rate	1.001	1.022	1.067	1.059	1.054	--	1.050
9th	38,050	36,551	40,403	43,487	44,085	45,816	
Rate	.946	1.001	.955	.955	.960	--	.962
10th	36,221	35,992	36,578	38,591	41,509	42,329	
Rate	.939	.943	.943	.941	.946	--	.943
11th	34,840	33,994	33,934	34,478	36,312	39,264	
Rate	.913	.934	.934	.927	.943	--	.934
12th	28,746	31,800	31,766	31,688	31,972	34,258	
Rate	.785	.882	.922	.967	.962	.908	.926
Graduates	22,552	28,035	29,300	30,632	30,765	31,096	

Source: Connecticut State Department of Education

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TABLE XX

ESTIMATED PUBLIC SCHOOL ENROLLMENT BY GRADE
STATE OF CONNECTICUT, 1968-1985

Grades	Weighted Average Rate 1963-1968	October 1st Enrollment For Year								
		1968	1969	1970	1971	1972	1973	1974	1975	1976
Kind.	1.059	56,415	--							
1st	.940	55,017	59,743	--						
2nd	.989	52,315	51,716	56,158	--					
3rd	1.011	51,582	51,740	51,147	55,540	--				
4th	.998	51,377	52,149	52,309	51,710	56,151	--			
5th	.990	50,862	51,274	52,045	52,204	51,607	56,039	--		
6th	.994	49,525	50,353	50,761	51,525	51,682	51,091	55,479	--	
7th	1.004	46,656	49,228	50,051	50,456	51,216	51,372	50,784	55,146	--
8th	1.050	45,649	46,843	49,425	50,251	50,658	51,421	51,577	50,987	55,367
9th	.962	45,816	47,931	49,185	51,896	52,764	53,191	53,992	54,156	53,536
10th	.943	42,329	44,075	46,110	47,316	49,924	50,759	51,170	51,940	52,098
11th	.934	39,264	39,916	41,563	43,482	44,619	47,078	47,866	48,253	48,979
12th	.926	34,258	36,673	37,282	38,820	40,612	41,674	43,971	44,707	45,068
Grads		31,723	33,959	34,523	35,947	37,607	38,590	40,717	41,399	41,733
Total 9-12		161,667	168,595	174,140	181,514	187,919	192,702	196,999	199,056	199,681
		1977	1978	1979	1980	1981	1982	1983	1984	1985
9th	.962	58,135	59,000	60,000	61,000	62,000	63,000	64,000	65,000	66,000
10th	.943	51,502	55,926	56,758	57,720	58,682	59,644	60,606	61,568	62,530
11th	.934	49,128	48,566	52,738	53,523	54,430	55,337	56,244	57,151	58,059
12th	.926	45,746	45,886	45,361	49,257	49,990	50,838	51,685	52,532	53,379
Grads		42,361	42,490	42,004	45,612	46,291	47,076	47,860	48,645	49,614
Total 9-12		204,511	209,378	214,857	221,500	225,102	228,819	232,535	236,251	239,968

was missing in 1969 and kindergarten and first grade in 1970, and so forth through the fall of 1977, when only the ninth through twelfth grades and the graduates were projected.

Since the total of ninth through twelfth students was necessary for one of the alternate estimates of community college enrollment potential, the ninth grade was projected from 1978 to 1985 on the basis of the historical increases from 1963 through 1968 and projected increases from 1968-1977. These increases averaged approximately one thousand students per year. The average progression rates were applied to this projection of ninth graders to get tenth, eleventh, and twelfth grades and graduates for the years through 1985.

RELATIONSHP BETWEEN PUBLIC AND NON-PUBLIC SCHOOL ENROLLMENTS

Table XXI shows the relationship between the enrollments in the ninth through twelfth grades for the public and non-public schools in Connecticut for the years 1963-1968. This table shows that for these years public school enrollments comprised approximately 82 percent of total enrollment in the ninth through twelfth grades in the state. A similar comparison was not available for the number of high school graduates during the same period as figures for the number of private school graduates were not available.

Nonetheless, based on the enrollments in ninth through twelfth grades between 1963 and 1968, it is estimated that this 82 percent figure will not alter substantially in the future and could also serve as a useful indication of the relationship between public and non-public high school graduates.

Therefore, using this relationship, it is possible to estimate the total enrollment in ninth through twelfth grades and the total number of high school graduates in Connecticut from the projections of public school enrollments and graduates.[17] A summary of the projections of the public school and state total enrollments in ninth through twelfth grades and high school graduates also appears in Table XXI.

THE PERCENT OF HIGH SCHOOL ENROLLMENT IN EACH REGIONAL PLANNING DISTRICT

Percent of public school enrollment for each regional

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[17] Total for State = $\frac{\text{Public School}}{.82}$

TABLE XXI

ESTIMATES OF SCHOOL ENROLLMENTS FOR PRIVATE AND PUBLIC SCHOOLS
STATE OF CONNECTICUT, 1963-1985

School	Private Schools		Public Schools		Public School % Total		Total	
Year	9-12	Grads	9-12	Grads	9-12	Grads	9-12	Grads
1963-64	29,592	NA	142,323	28,035	82.8	NA	171,915	NA
1964-65	31,101	NA	141,389	NA	82.0	NA	172,490	NA
1965-66	32,009	NA	143,555	30,632	81.8	NA	175,564	NA
1966-67	32,878	NA	148,360	30,765	81.9	NA	181,238	NA
1967-68	33,312	NA	153,958	31,096	82.2	NA	187,270	NA
1968-69	NA	NA	NA	NA	NA	NA	NA	NA
1969-70	--	--	168,595	33,959	82.0	82.0	205,604	41,413
1970-71	--	--	174,140	34,523	↓	↓	212,366	42,101
1971-72	--	--	181,514	35,947	↓	↓	221,359	43,838
1972-73	--	--	187,919	37,607	↓	↓	229,170	45,862
1973-74	--	--	192,702	38,590	↓	↓	235,002	47,061
1974-75	--	--	196,999	40,717	↓	↓	240,243	49,655
1975-76	--	--	199,056	41,399	↓	↓	242,751	50,487
1976-77	--	--	199,681	41,733	↓	↓	243,513	50,894
1977-78	--	--	204,511	42,361	↓	↓	249,404	51,660
1978-79	--	--	209,378	42,490	↓	↓	255,340	51,817
1979-80	--	--	214,857	42,004	↓	↓	262,021	51,224
1980-81	--	--	221,500	45,612	↓	↓	270,122	55,624
1981-82	--	--	225,102	46,291	↓	↓	274,515	56,452
1982-83	--	--	228,819	47,076	↓	↓	279,048	57,410
1983-84	--	--	232,535	47,860	↓	↓	283,579	58,366
1984-85	--	--	236,251	48,645	↓	↓	288,111	59,323
1985-86	--	--	239,968	49,614	82.0	82.0	292,644	60,505

planning district in Connecticut are shown in Table XXII for 1963-1964 and 1968-1969. The only figures that were available for each of the planning districts were the total public school enrollments for grades kindergarten through twelve for each of the towns within each planning district. Consequently, it was not possible to obtain a breakdown of the number of students in grades 9 through 12 , of high school graduates for the public schools, or estimates of the total private school enrollment for each of the planning districts.

Therefore, the trends in the relationship between the total public school enrollments for the years 1963-1964 and 1968-1969 for each planning district were used as a basis to estimate the percent of the total state public and non-public enrollment in grades nine through twelve and high school graduates from each of the planning districts for the years 1970, 1975, 1980. and 1985. A summary of the estimates of these percentages for these years also appears in Table XXII.

RELATIONSHIP BETWEEN DAY AND NIGHT PROGRAMS

In alternatives I and II it was assumed that approximately 80 percent of the total full time equivalent (FTE) will be enrolled in the day program and 20 percent in the night program for the non-urban districts. For the urban areas in the state the ratios are 70 percent in the day program and 30 percent in the night program. Since alternative III was done only at the state level the average ratio that resulted for the total state in alternatives I and II was used. This equalled 73 percent of the total in the day program and 27 percent in the night program.

However, these ratios are dependent upon a fully encouraged and sustained evening program. If, for any reason, the night program does not develop to the extent that is possible, the loss in enrollment in the evening program generally should not be expected to be transferred to the day program. Therefore, the day enrollment should remain in the forecasted range whether or not there is a well developed evening program.

RATIO BETWEEN FTE AND HEADCOUNT STUDENTS

The ratio between FTE and headcount students can vary considerably among colleges depending on the programs offered and the general environment of the college. However, in general we would think that with a well developed program in all the community colleges in Connecticut, we could expect that the average day student, both full time and part time, would

TABLE XXII

PERCENT OF TOTAL SCHOOL ENROLLMENT FOR REGIONAL PLANNING DISTRICTS
STATE OF CONNECTICUT, 1963-1985

Planning District	Public School Enrollment		Percent of Total		Estimated Percent of Total			
	1963-64	1968-69	1963-64	1968-69	1970-71	1975-76	1980-81	1985-86
Capitol	123,587	149,457	22.7	23.5	23.6	23.8	24.0	24.0
Central Connecticut	40,914	45,328	7.5	7.1	7.0	6.9	6.9	6.9
Central Naugatuck Valley	39,315	44,363	7.2	7.0	7.0	7.0	7.0	7.0
Connecticut River Estuary	7,692	10,168	1.4	1.6	1.7	1.7	1.7	1.7
Greater Bridgeport	51,440	56,907	9.5	9.0	9.0	8.9	8.8	8.8
Housatonic Valley	17,353	26,120	3.2	4.1	4.1	4.2	4.3	4.3
Litchfield Hills	12,382	13,662	2.3	2.1	2.1	2.1	2.1	2.1
Midstate Planning	14,221	16,087	2.6	2.5	2.5	2.5	2.4	2.4
Northeastern Conn.	8,875	11,286	1.6	1.8	1.8	1.9	2.0	2.0
Northwestern Conn.	5,896	7,550	1.1	1.2	1.2	1.1	1.1	1.1
South Central	93,714	104,565	17.3	16.4	16.3	16.2	16.0	16.0
South Eastern	42,818	49,536	7.9	7.8	7.8	7.7	7.6	7.6
South Western	60,774	71,544	11.2	11.3	11.3	11.4	11.5	11.5
Valley	13,144	14,815	2.4	2.3	2.3	2.2	2.2	2.2
Windham	11,348	14,427	2.1	2.3	2.3	2.4	2.4	2.4
Total	543,473	635,815	100.0	100.0	100.0	100.0	100.0	100.0

Source: Connecticut State Department of Education.

carry approximately four and a half units of credit. If an FTE student is defined as one carrying 15 semester hours, there would be approximately 1.154 headcount students for every FTE student in the day program and 3.34 headcount students for every FTE student in the night program.

SUMMARY - ALTERNATIVE I

In summary, alternative I allocates the total enrollment in grades 9-12 within the state of Connecticut through the year 1985 to each planning district on the basis if the percentages that appear in Table XXII (percent of school enrollment by planning districts) and then determines FTE enrollment potential for community colleges on the basis of the number of students in ninth through twelfth grades within each district.

We have estimated that the total community college FTE enrollment potential in Connecticut will range between a high of 25 percent and a low of 20 percent respectively, of the total enrollment in ninth through twelfth grades in the planning districts with an urban environment and between 23 percent and 18 percent for those planning districts with a non-urban environment. A summary of the enrollments in ninth through twelfth grades and the high and low range of community college FTE enrollment potential for each planning district appears in Table XXIII for the fall 1970, 1975, 1980, and 1985.

SUPPORTING DETAIL FOR ENROLLMENT PROJECTION ALTERNATIVE II

The alternative II estimates of FTE enrollment potential for the state of Connecticut are based upon an average rate of enrollment for each one thousand population as applied to the total population within each of the planning districts in Connecticut.

COMPARATIVE POPULATION PARTICIPATION RATES

Shown in Table XXIV are population participation rates for a few selected colleges and states. As might be expected, California has one of the highest population participation rates in the country--in many cases more than twice that of some of the other leading states. This high rate can be attributed to many factors. However, two of the major ones are:

- a long tradition by the various agencies of government and the general public of accepting community college education as an integral part of higher education in the state,

TABLE XXIII

COMMUNITY COLLEGE ENROLLMENT POTENTIAL, STATE OF CONNECTICUT
ALTERNATIVE I ESTIMATE -- TOTAL FTE ENROLLMENT

	Total Enrollment Grades 9-12				Estimated Community College FTE Enrollment							
					1970		1975		1980		1985	
Planning District	1970	1975	1980	1985	High	Low	High	Low	High	Low	High	Low
Urban Environment												
Capitol	50,118	57,775	64,829	70,235	12,530	10,024	14,444	11,555	16,207	12,966	17,559	14,047
Central Conn.	14,866	16,750	18,638	20,192	3,717	2,973	4,188	3,350	4,660	3,728	5,048	4,038
Central Naugatuck	14,866	16,992	18,909	20,485	3,717	2,973	4,248	3,398	4,727	3,782	5,121	4,097
Greater Bridgeport	19,113	21,605	23,771	25,753	4,778	3,823	5,401	4,321	5,943	4,754	6,438	5,151
South Central	34,616	39,325	43,220	46,823	8,654	6,923	9,831	7,865	10,805	8,644	11,706	9,365
South Eastern	16,565	18,692	20,529	22,241	4,141	3,313	4,673	3,738	5,132	4,106	5,560	4,448
South Western	23,997	27,674	31,064	33,654	5,999	4,799	6,919	5,535	7,766	6,213	8,414	6,731
Non-Urban Environment												
Conn. River Estuary	3,610	4,127	4,592	4,975	830	650	949	743	1,056	827	1,144	896
Housatonic Valley	8,707	10,195	11,615	12,584	2,003	1,567	2,345	1,835	2,671	2,091	2,894	2,265
Litchfield Hills	4,460	5,098	5,673	6,146	1,026	803	1,173	918	1,305	1,021	1,414	1,106
Midstate	5,309	6,069	6,483	7,023	1,221	956	1,396	1,092	1,491	1,167	1,615	1,264
Northeastern	3,823	4,612	5,402	5,853	879	688	1,061	830	1,242	972	1,346	1,054
Northwestern	2,548	2,670	2,971	3,219	586	459	614	481	683	535	740	579
Valley	4,884	5,341	5,943	6,438	1,123	879	1,228	961	1,367	1,070	1,481	1,159
Windham	4,884	5,826	6,483	7,023	1,123	879	1,340	1,049	1,491	1,167	1,615	1,264
Total Connecticut(1)	212,366	242,751	270,122	292,644	52,327	41,709	59,810	47,671	66,546	53,043	72,095	57,464

(1) Arthur D. Little, Inc. projections. See Table XXI.

TABLE XXIV

COMPARATIVE POPULATION PARTICIPATION RATES FOR COMMUNITY COLLEGE ENROLLMENTS

Location	Total Enrollment 1967-68	Total Enrollment 1968-69	Estimated FTE 1968-69[1]	Population of Location[2]	Enrollment/1000 Pop. Total	Enrollment/1000 Pop. Estimated FTE
California (State)	541,693	603,860	360,000	19,153,000	31.5	18.8
Kern (Bakersfield)	9,582	10,351	6,500	339,500	30.5	19.1
Fresno County	11,138	12,091	8,000	420,700	28.7	19.0
Sacramento County	18,636	21,986	14,500	631,700	34.8	23.0
San Mateo County	19,195	21,659	12,000	555,400	39.0	21.6
Stanislaus (Modesto)	8,647	9,959	6,000	182,200	54.7	32.9
Humbolt (Eureka)	3,295	3,874	2,200	105,900	36.6	20.8
Florida (State)	81,490	95,984	69,000	5,995,000	16.0	11.5
Miami (City)	23,766	26,325	20,000	1,081,000	24.4	18.5
Illinois (State)	93,045	110,642	65,000	10,893,000	10.2	6.0
Michigan (State)	81,490	96,984	59,000	8,584,000	11.3	6.9
Washington (State)	64,411	68,371	43,000	3,087,000	22.1	13.9
Connecticut (1970 Potential for State)	--	--	46,481	3,100,000		15.0

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(1) Arthur D. Little estimate.

(2) Most recent year available (generally 1967).

Sources: 1969 Junior College Directory, American Association of Junior Colleges.
Statistical Abstract of the United States, 1968.

- the development of enough community colleges so that virtually all the population areas within the state are within normal commuting distance of a campus.

Nonetheless, even though the overall state averages for many of the other states are much lower than California, many areas within these states with developed campuses show rates that are comparable to those of many of the schools within California. In addition, colleges in all states have shown tremendous enrollment increases in the last few years; the figures in Table XXIV show selected fall enrollments for 1967 and 1968. These increases can be attributed to three major factors:

- the establishment of more new schools,
- the growth of the total population in the areas served by the college,
- the gradual progression of schools toward their ultimate enrollment potential with respect to the district which they serve.

A good example of this type of enrollment growth that might be anticipated is the state of Washington. Supporting a total population roughly equal to that of Connecticut, the state of Washington has shown an enrollment growth of from 15,000 to almost 70,000 headcount students over a five year period; and further enrollment growth that exceeds any anticipated increase in population is expected. Needless to say, this type of growth far exceeded even the most optimistic projections of the educators within the state.

CONNECTICUT COMMUNITY COLLEGE POTENTIAL ENROLLMENT ESTIMATES

We feel that Connecticut, because of its relatively high degree of concentration of population, has an excellent opportunity to attract large numbers of the type of students who generally attend community colleges. For example, with the location of ten to twelve campuses in the right areas geographically, every area within the state would be within 25 miles of a campus.

Therefore, based on the historical relationship between population and community college enrollments that has existed at many other schools in other states, we estimate that the population participation rate would range from a high of sixteen FTE to a low of fourteen FTE per thousand population for the urban planning districts and from a high of fifteen FTE and a low of thirteen FTE for the non-urban planning districts. A summary of these assumptions applied to the projected population for the planning districts appears in Table XXV.

SUMMARY OF ALTERNATIVES I AND II - ESTIMATES OF ENROLLMENT POTENTIAL

Tables XXVI and XXVII show the summary of enrollment potential calculated by alternate methods I and II for the community colleges in Connecticut. Table XXVI shows the FTE enrollment, and Table XXVII shows the headcount enrollment projected in each planning district for the years 1970, 1975, 1980, and 1985. The total FTE enrollment in Table XXVI is the average of the high and low projections for alternatives I and II for each of the planning districts. The day and night FTE enrollments were derived from the total enrollment on the basis of the relationship for day and evening FTE enrollments as discussed above.

The headcount enrollments in Table XXVII were derived by multiplying the day and night FTE enrollments in Table XXVI by the ratios discussed above. The day and evening headcount enrollments were added to obtain total headcount enrollment potential for community colleges.

SUPPORTING DATA FOR ENROLLMENT PROJECTION ALTERNATIVE III

The alternative III estimate of FTE enrollment potential for Connecticut was made for each year between 1970 and 1985, at the state level. This alternative is based on the number of high school graduates in the state of Connecticut. Ratios were applied to these graduates to determine the number of FTE full time freshmen that would attend community colleges. Additional relationships were used to determine the full time sophomores, part-time and total night programs.

SOME RATES FOR HIGH SCHOOL SENIORS BECOMING COMMUNITY COLLEGE FRESHMAN

High school seniors are frequently questioned about their post-high school plans. The results of several of these studies are mentioned here. Studies were conducted in EL Paso County, Colorado and the state of Nevada respectively. The graduating seniors of a school district in El Paso County in the spring of 1966 were studied as a part of a doctor's dissertation. In that study it was found that more than 40 percent of the seniors in that year stated that they would attend a community

TABLE XXV

COMMUNITY COLLEGE ENROLLMENT POTENTIAL, STATE OF CONNECTICUT
ALTERNATIVE II ESTIMATE -- TOTAL FTE ENROLLMENT

					Estimated Community College FTE Enrollment							
	Total Population (1000)				1970		1975		1980		1985	
Planning District	1970	1975	1980	1985	High	Low	High	Low	High	Low	High	Low
Urban Environment												
Capitol	680.6	749.5	818.4	897.3	10,890	9,528	11,992	10,493	13,094	11,458	14,357	12,562
Central Conn.	222.2	241.4	260.6	283.9	3,555	3,111	3,862	3,380	4,170	3,648	4,542	3,975
Central Naugatuck	227.1	247.7	268.2	293.2	3,634	3,179	3,963	3,468	4,291	3,755	4,691	4,105
Greater Bridgeport	307.5	323.5	339.5	356.9	4,920	4,305	5,176	4,529	5,432	4,753	5,710	4,997
South Central	529.7	574.1	618.5	663.6	8,475	7,416	9,186	8,037	9,896	8,659	10,618	9,290
South Eastern	222.7	248.5	274.3	307.2	3,563	3,118	3,976	3,479	4,389	3,840	4,915	4,301
South Western	354.4	397.3	440.1	475.7	5,670	4,962	6,357	5,562	7,042	6,161	7,611	6,660
Non-Urban Environment												
Conn. River Estuary	42.7	49.9	57.1	66.7	641	555	749	649	857	742	1,001	867
Housatonic Valley	120.1	143.1	166.1	185.8	1,802	1,561	2,147	1,860	2,492	2,159	2,787	2,415
Litchfield Hills(1)	70.1	75.9	81.6	89.4	1,052	911	1,139	987	1,224	1,061	1,341	1,162
Midstate	81.1	91.9	102.7	117.8	1,217	1,054	1,379	1,195	1,541	1,335	1,767	1,531
Northeastern	61.0	68.4	75.7	83.7	915	793	1,026	889	1,136	984	1,256	1,088
Northwestern(1)	34.6	38.1	41.6	46.1	519	450	572	495	624	541	692	599
Valley	69.8	76.2	82.6	90.3	1,047	907	1,143	991	1,239	1,074	1,355	1,174
Windham(1)	76.4	87.0	97.6	107.5	1,146	993	1,305	1,131	1,464	1,269	1,613	1,398
Total Connecticut	3,100.0	3,412.5	3,724.6	4,065.1	49,046	42,843	53,972	47,145	58,891	51,439	64,256	56,124

(1) Litchfield Hills, Northwestern, and Windham include some population that are in areas not currently assigned to any planning district.

Source: Connecticut Interregional Planning Program, Connecticut Department of Finance and Control.

TABLE XXVI

SUMMARY OF DAY AND EVENING FTE ENROLLMENT POTENTIAL CONNECTICUT COMMUNITY COLLEGES, 1970-1985

	Estimated Community College FTE Enrollment				Estimated Day FTE Enrollment				Estimated Evening FTE Enrollment			
Planning District	1970	1975	1980	1985	1970	1975	1980	1985	1970	1975	1980	1985
Urban Environment												
Capitol	10,743	12,121	13,431	14,631	7,520	8,485	9,402	10,242	3,223	3,636	4,029	4,389
Central Conn.	3,339	3,695	4,052	4,401	2,337	2,587	2,836	3,081	1,002	1,108	1,216	1,320
Central Naugatuck	3,376	3,769	4,139	4,504	2,363	2,638	2,897	3,153	1,013	1,131	1,242	1,351
Greater Bridgeport	4,457	4,857	5,220	5,574	3,120	3,400	3,654	3,902	1,337	1,457	1,566	1,672
South Central	7,867	8,730	9,501	10,245	5,507	6,111	6,651	7,171	2,360	2,619	2,850	3,074
South Eastern	3,534	3,966	4,367	4,806	2,474	2,776	3,057	3,364	1,060	1,190	1,310	1,442
South Western	5,357	6,093	6,795	7,354	3,750	4,265	4,757	5,148	1,607	1,828	2,038	2,206
Non-Urban Environment												
Conn. River Estuary	669	773	871	977	535	618	697	782	134	155	174	195
Housatonic Valley	1,733	2,047	2,353	2,590	1,386	1,638	1,882	2,072	347	409	471	518
Litchfield Hills	948	1,054	1,153	1,256	758	843	922	1,005	190	211	231	251
Midstate	1,112	1,266	1,384	1,544	890	1,013	1,107	1,235	222	253	277	309
Northeastern	819	952	1,084	1,186	655	762	867	949	164	190	217	237
Northwestern	503	540	596	653	402	432	477	522	101	108	119	131
Valley	989	1,081	1,187	1,292	791	865	950	1,034	198	216	237	258
Windham	1,035	1,206	1,347	1,472	828	965	1,078	1,178	207	241	269	294
Total Connecticut	46,481	52,150	57,480	62,48[illegible]	33,316	37,398	41,234	44,838	13,165	14,752	16,246	17,647

TABLE XXVII

SUMMARY OF DAY AND EVENING HEADCOUNT ENROLLMENT POTENTIAL CONNECTICUT COMMUNITY COLLEGES, 1970-1985

	Estimated Community College Headcount Enrollment				Estimated Day Headcount Enrollment				Estimated Evening Headcount Enrollment			
Planning District	1970	1975	1980	1985	1970	1975	1980	1985	1970	1975	1980	1985
Urban Environment												
Capitol	19,423	21,914	24,283	26,452	8,678	9,792	10,850	11,819	10,745	12,122	13,433	14,633
Central Conn.	6,038	6,679	7,327	7,956	2,697	2,985	3,273	3,555	3,341	3,694	4,054	4,401
Central Naugatuck	6,104	6,815	7,484	8,143	2,727	3,044	3,343	3,639	3,377	3,771	4,141	4,504
Greater Bridgeport	8,058	8,782	9,438	10,077	3,600	3,924	4,217	4,503	4,458	4,858	5,221	5,574
South Central	14,223	15,784	17,177	18,524	6,355	7,052	7,675	8,275	7,868	8,732	9,502	10,249
South Eastern	6,389	7,171	7,896	8,690	2,855	3,204	3,528	3,882	3,534	3,967	4,368	4,808
South Western	9,686	11,017	12,285	13,296	4,328	4,922	5,490	5,941	5,358	6,095	6,795	7,355
Non-Urban Environment												
Conn. River Estuary	1,064	1,230	1,384	1,552	617	713	804	902	447	517	580	650
Housatonic Valley	2,756	3,254	3,742	4,118	1,599	1,890	2,172	2,391	1,157	1,364	1,570	1,727
Litchfield Hills	1,508	1,676	1,834	1,997	875	973	1,064	1,160	633	703	770	837
Midstate	1,767	2,013	2,201	2,455	1,027	1,169	1,277	1,425	740	844	924	1,030
Northeastern	1,303	1,512	1,724	1,885	756	879	1,001	1,095	547	633	723	790
Northwestern	801	859	947	1,039	464	499	550	602	337	360	397	437
Valley	1,573	1,718	1,886	2,053	913	998	1,096	1,193	660	720	790	860
Windham	1,646	1,917	2,141	2,339	956	1,114	1,244	1,359	690	803	897	980
Total Connecticut	82,339	92,340	101,748	110,578	38,447	43,157	47,584	51,743	43,892	49,183	54,164	58,835

college if one were located in the county.[18]

Table XXVIII shows the results of a questionaire distributed to all high school seniors in the state of Nevada in the school year 1967-1968. In a state that has relatively no history of community college education, 15 percent of the seniors said they would go to community college if one were located in the county in which they resided. An additional 45 percent expressed some interest in this type of education. This is in a state that already possesses institutions of higher education with relatively low admission requirements in both of the major population centers in the state. Even in these areas, Clark, Douglas, and Washoe counties, 14-23 percent of the seniors said they would attend and another 36-44 percent once again expressed interest.

TABLE XXVIII

COMMUNITY COLLEGE INTERESTS OF 1967 NEVADA SENIORS

Area	Plan		
	Would Go	Might Go	Would Not Go
Nevada	15%	45%	40%
Clark County	18%	42%	40%
Douglas County	23%	36%	41%
Elko County	9%	57%	34%
Washoe County	14%	44%	42%

Source: Recommendations for Community College Education in the State of Nevada, Arthur D. Little, Inc.

However, this does not necessarily mean that either all freshmen or even first time freshmen in community colleges are recent high school graduates. A recent study in Colorado illustrates two important facts in this regard.[19]

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[18] Variables Related to the Educational Vocational Decision Making of High School Seniors, Dr. Julian T. Tatum, Unpublished Dissertation, Colorado State College, 1967.

[19] Unpublished records, Colorado Commission on Higher Education.

First, this study showed that, in areas in which a community college had been located for more than three years, between 33 and 62 percent with an average of 46 percent of the high school graduates from the spring of 1968 became community college freshmen in the fall of 1968.

The study also showed that there were approximately 3500 first time community college freshmen in the entire state who graduated from high school the previous spring. However, the total enrollment in community colleges in Colorado totaled more than 10,500 FTE students. This meant that the recent high school graduate represented, at most, only 35 percent of the entire FTE enrollment in the fall of 1968. Since it is generally accepted that the freshmen usually outnumber sohpomores at community colleges, constituting up to 65 percent of the enrollment in some colleges, this seems to be a remarkable discrepancy.

However, one explanation for this situation seems to be that the other students were not only sophomores, but non first time freshmen, first time freshmen who graduated from high school in years prior to the previous spring, and first time freshmen who did not graduate from high school at all (in some areas, high school dropouts are as much as 15 percent of the age group). Therefore, from these data, it can be seen how it might be possible to have 35-40 percent of the high school graduates go on to community colleges as freshmen and still have a freshman class equal to 60-70 percent of the graduates.

Based upon the experience in schools in other states, we do not feel that it would be unreasonable for Connecticut to expect approximately 35-40 percent of the high school graduates in the state to attend community colleges as freshmen in the following fall. Furthermore, we expect these freshmen to represent about an FTE enrollment equivalent to 35 percent of the high school graduates the previous spring. In addition, we expect that there would be FTE enrollment of non-first time freshmen and first time freshmen who did not graduate the previous spring that would be equal to approximately 10 percent of the high school graduates from the previous spring. Of the total freshman class, we would then expect approximately 60 percent to proceed to the sophomore class the following year. Part time and night students could be calculated then from the full time. A summary of the assumptions used in the projections for the total state enrollment and community colleges in Connecticut is as follows.

- FTE full time freshmen who graduated from high school the previous spring would be equal to 35 percent of the high school graduates in the previous spring

- the total FTE full time freshman class would, therefore, be equal to 45 percent of the high school graduates from the previous spring
- the total sophomore FTE full time students would be equal to 60 percent of the freshman class in the previous year
- FTE enrollment of part time day students would equal approximately 10 percent of the full time day FTE enrollment
- the total day FTE enrollment would comprise approximately 73 percent of the total enrollment.

A summary of the estimated community college enrollment for the state of Connecticut through 1985 using these assumptions appears in Table XXIX.

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TABLE XXIX

COMMUNITY COLLEGE ENROLLMENT POTENTIAL, STATE OF CONNECTICUT
ALTERNATIVE III ESTIMATE -- TOTAL FTE ENROLLMENT

Year	High Sch. Grads Previous Year(1)	Full Time Day Students: Freshman: H.S. Grads Prev. Yr.	Full Time Day Students: Freshman: Total	Full Time Day Students: Total Soph.	Full Time Day Students: Total Full Time	Part Time Day	Total Day	Total Night	Grand Total
1970	41,413	14,495	18,636	(10,900)	(29,500)	(2,950)	(32,450)	12,002	(44,452)
1971	42,101	14,735	18,945	11,182	30,127	3,013	33,140	12,257	45,397
1972	43,838	15,343	19,727	11,367	31,094	3,109	34,203		46,853
1973	45,862	16,052	20,638	11,836	32,474	3,247	35,721	13,212	48,933
1974	47,061	16,471	21,177	12,383	33,560	3,356	36,916	13,654	50,570
1975	49,655	17,379	22,345	12,706	35,051	3,505	38,556	14,260	52,816
1976	50,487	17,670	22,719	13,407	36,126	3,613	39,739	14,698	54,437
1977	50,894	17,813	22,902	13,631	36,533	3,653	40,186	14,863	55,049
1978	51,660	18,081	23,247	13,741	36,988	3,699	40,687	15,049	55,736
1979	51,817	18,136	23,318	13,948	37,266	3,727	40,993	15,162	56,155
1980	51,224	17,929	23,051	14,291	37,342	3,734	41,075	15,192	56,268
1981	55,624	19,469	25,031	13,831	38,862	3,886	42,748	15,811	58,559
1982	56,452	19,758	25,403	15,019	40,422	4,042	44,464	16,446	60,910
1983	57,410	20,094	25,835	15,242	41,077	4,108	45,185	16,712	61,897
1984	58,366	20,428	26,265	15,501	41,766	4,177	45,943	16,993	62,936
1985	59,323	20,763	26,695	15,759	42,454	4,245	46,699	17,272	63,971

(1) Arthur D. Little, Inc. projections. See Table XXI